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ABSTRACT

Developed during a project to document and analyze the tech prep initiative in Texas, this handbook contains exemplary documents associated with the model programs in the state. This second edition of the handbook organizes documents in sections (sections A, C, D, and G) that correspond to the major impact sectors identified during the research project: (1) tech prep consortia; (2) colleges and universities; (3) disciplinary bodies; (4) government; and (5) industry and business. Document types include consortia agreements, competency lists, courses of study, flowcharts, program descriptions, summaries of legislation, articulation guides, and publicity flyers. Other sections (B, E, F, and H-K) are blank. Documents on the following topics are planned to be added to these sections at a later date; independent school districts; exemplars, innovators, and emerging efforts; students; home and public; other initiatives; and economic development. Section V is a glossary defining 91 terms. (KC)

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SPECAP

Strategic Planning
Evaluation of Curriculum
Assessment of Performance

ED 402 453

The Tech Prep Handbook:

Essential Documents to Promote Effective Tech Prep Policies and Practices

Editors: Oliver D. Hensley
Ronald D. Opp
Pamela A. Cooper
Bethany C. Rivers
Clifford N. Chambers

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The following *Handbook* with its enclosed documents is provided to generate and document information about exemplary Tech Prep processes, and to show the exemplary documents that facilitated those processes. This publication is not copyrighted and may be reproduced entirely or in part. The authors or editors would appreciate credit for the material used and a copy of the reprint.

Acknowledgments

Special thanks to our colleagues for their dedication and commitment to this team effort during the past year. We could not have completed this project without their assistance.

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November, 1996

We dedicate this publication in memory of a scholar, a college, and our friend, Dr. Pamela A. Cooper, who departed from us on September 21, 1995.

After receiving an undergraduate degree in journalism and a master's degree in public administration, and holding several administrative positions in the private and public sectors, Dr. Cooper entered the higher education doctoral program at Texas Tech in 1988. She received her doctorate in December, 1991. Her dissertation received the Leo and Margaret Goodman-Malamuth Award for Excellence in Research from the University Administrators Foundation.

Following her graduation, Dr. Cooper remained at Texas Tech, assuming the position of Director of Development and External Relations for the library. Of her many successes while in that position, her driving force in establishing the Southwest Special Collections will be long remembered. In her memory, an endowed position will be created at the library.

Along with her administrative duties, Dr. Cooper taught in the Higher Education doctoral program. She was relentless in her quest for excellence in herself, and inspired her students to strive for the same. She touched the lives of many students-- mentoring and guiding them -- and sharing her love of knowledge and scholarship. In everything she did, she was a scholar.

Dr. Cooper was a vital part of our SPECAP project. The rapid click of the heels of her shoes in our halls always signaled her arrival. She brought with her a multitude of abilities as editor, researcher, presenter, and administrator. With her tremendous professionalism and tenacity, she frequently worked long into the night, giving up weekends and holidays to prepare presentations, scan and evaluate data, write text, and inquire into administrative matters.

In everything she did, she was a colleague, a scholar, and a friend.

She is dearly missed.

Dr. Pamela A. Cooper, Principal Investigator SPECAP Research Group
Colleague, Scholar, and Friend...

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Preface

The Editors of *The Tech Prep Handbook* are committed to providing a series of documents, relevant knowledge, current information and comparative data to assist Tech Prep professionals.

The Editors are convinced, after a comprehensive study of Texas Tech Prep Consortia, that the Tech Prep professionals are creating an emerging discipline that is leading the way in education innovation. They have a unique mission, a distinct body of knowledge, and special work that distinguishes them from a large group of educational and business associates.

Tech Prep professionals see the importance of models, standards of practice, explanations of exemplary policies and practices in strategic planning, the development and evaluation of curriculum, and the assessment of performance. The SPECAP staff has created and validated models that explain the total Tech Prep system. They have identified the major sectors and specific stakeholders participating in developing Tech Prep education. They have identified the general processes used by the stakeholders and have modeled that process. Together, these models generally explain the people and activities being used to operate Tech Prep programs in the State of Texas.

Currently, Tech Prep is a developing field with information and knowledge scattered throughout a large number of regional consortia, governmental agencies, special projects, and demonstration classrooms. It is our charge to determine, from the practitioner in the educational system, which policies and practices work in an exemplary manner.

The Tech Prep Handbook is not a register of all documents, knowledge, information and data related to Tech Prep -- that is the function of a clearinghouse. Instead, the purpose of *The Tech Prep Handbook* is to publish exemplary documents, essential knowledge, select information, and data necessary to enhance the work of Tech Prep professionals. To assist the staff in achieving this purpose, we established an Advisory Board of Tech Prep stakeholders to meet quarterly to review our plans and the documents being included in SPECAP publications. Also, we have established a series of liaison mechanisms with the Tech Prep Director's Association of Texas and Tech Prep personnel in the field to determine what the experts in the field judge to be essential and exemplary.

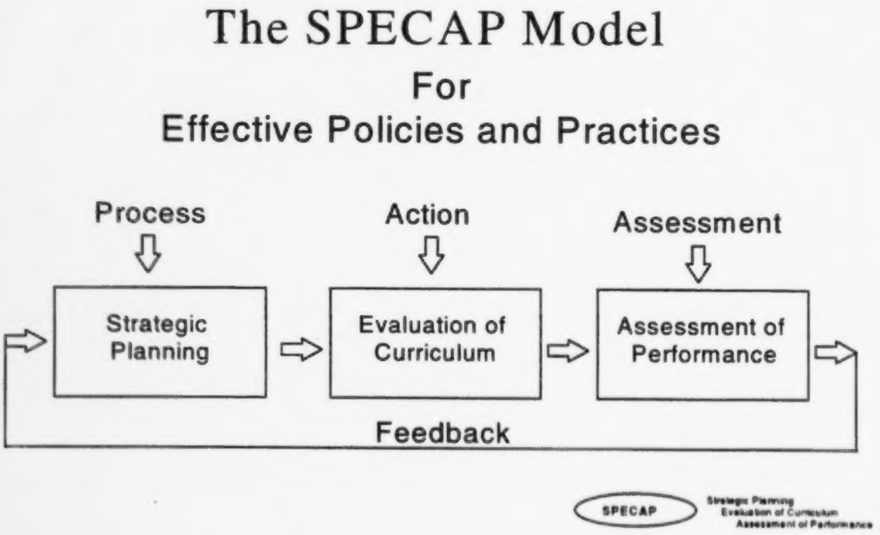
As this is a first generation handbook, we have possibly not yet identified some important information. As the *Handbook* reaches a wider audience of experts, gaps will become evident. We would like your assistance in "closing these gaps" by asking you to send us samples of documents that could be added to supplements of the *Handbook*.

What is the SPECAP Research Group?

Tech Prep is a major federal initiative to improve vocational/technical education in the state of Texas and in the nation. Given the availability of major federal resources through the Carl D. Perkins Vocational and Applied Technology Education Act of 1990, Tech Prep consortia have been formed throughout the state of Texas, and twenty-five Tech Prep consortia are beginning their fifth year of implementation across the state. Clearly, the improvement of technical and vocational education through this legislative act is a major federal and state initiative which has captured the attention of individuals in both the education and business and industry sectors.

The Strategic Planning, Evaluation of Curriculum, and Assessment of Performance (SPECAP) research group, Texas Tech University, is a group funded through a Carl Perkins Grant to study the effective policies and practices of these twenty-five consortia in Texas. The theoretical framework of this research project is based on the assumption that the organizational structure and the processes of effective Tech Prep programs can be modeled, characterized, and evaluated for effectiveness, and then, the loop may be closed by feeding back curriculum evaluation and performance assessment information into the strategic planning process. The model guiding this research project can be found in Figure 1.

Figure 1. The SPECAP Model.


The SPECAP Model
For
Effective Policies and Practices
Process
Action
Assessment
Strategic Planning
Evaluation of Curriculum
Assessment of Performance
Feedback
SPECAP
Strategic Planning
Evaluation of Curriculum
Assessment of Performance

The Strategic Planning, Evaluation of Curriculum, and Assessment of Performance (SPECAP) Model is new and relies heavily on expert systems techniques for modeling the entire Tech Prep system. School-based and work-based faculty, along with business and industry representatives, as the experts in the system, validate the structure and major processes of the systems as described by the SPECAP Theoretical Model.

The SPECAP model suggests that Tech Prep consortia begin their work using strategic planning to determine the means, objectives, goals, and strategies that they will follow in organizing, prioritizing, and implementating of Tech Prep. Following these decisions, the consortia revise or create curricula to fit Tech Prep concepts of effective technical and vocational programs. After these developments or revisions, the curricula are evaluated by school-and work-based experts to determine their validity and effectiveness.

The information gleaned from the evaluation of program curricula is used by consortia and program members to implement changes in consortium and program planning to improve the effectiveness of program curricula. In a similar fashion, the performance of students, faculty, and consortium staff are assessed at appropriate intervals to determine the strengths and weaknesses of the key groups involved in Tech Prep. Based on this performance assessment information, changes are implemented by consortia to improve the performance of these groups.

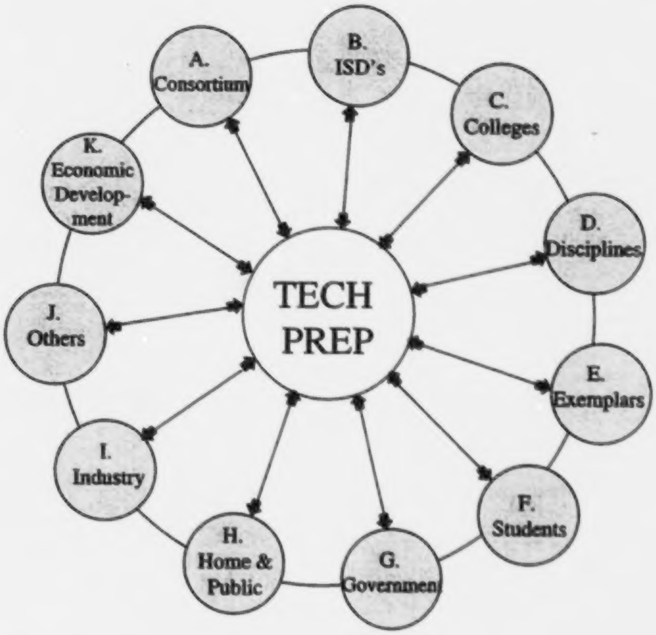
The SPECAP 1994-95 comprehensive analyses were focused on determining what type of impact Tech Prep planning and implementation was having on both education and economic development within the state of Texas. Was it providing a competent and technically-educated workforce for Texas industry? The 1994-95 SPECAP project began with a review of the consortia's 1992-93 Carl Perkins Tech Prep Implementation Proposals to determine the extent of planning for the development of regional Tech Prep consortia. This information was expanded through questionnaires, site visits, and interviews to obtain empirical data about policies and practices presently being used by Tech Prep consortia. Exemplary planning processes and systems components were identified to serve as demonstration sites for superlative Tech Prep programs.

The second grant year's purpose and focus changed slightly. The purpose of the grant project was to identify and describe effective policies and practices in the development and evaluation of Tech Prep program curricula in the career pathways of allied health, business, and engineering technology in Texas. The grant project was designed as a continuation of the previous year's efforts by the SPECAP Research Group to identify and describe effective policies and practices in strategic planning in Tech Prep consortia in Texas. Many of the models, processes, and products used to examine strategic planning in 1994 were modified and refined to examine curriculum development and evaluation activities in the 1995 year's grant activities.

The SPECAP research team, through a number of personal interviews, questionnaires, and site visits, has determined from their observations that technical education practices are following the policies established through articulation agreements and that these policies are a direct outgrowth of Tech Prep consortium planning. This model of planning --> policy --> practice seems to be having a very positive impact on technical education in the public schools. It appears that this new model is developing a pool of skilled technicians who can move immediately into the local/regional workforce. A fundamental purpose of this study is to trace the efficacy of the planning --> policy --> practice model in 25 very diverse Tech Prep consortia in Texas and to objectively report on their effective policies and practices in student performance assessment.

Given the considerable amount of federal and state resources flowing into Tech Prep, it is not surprising that there is a growing demand for consortia receiving this federal funding to demonstrate that the money received is improving the quality of vocational/technical education in the state of Texas. Demonstration of quality is becoming increasingly important to taxpayers as the investment of tax dollars in technical and vocational programs continues to grow. The 1996 project has been designed to document quality by identifying and disseminating information about effective policies and practices in the focus area of student performance assessment in three career areas vital to the economic development of Texas: allied health, business, and engineering technology. Once effective policies and practices have been identified, they may be replicated with considerable cost savings to local, state, and federal agencies, and with significant improvement in local practice.

The SPECAP Stakeholders Model


TECH PREP
A. Consortium
B. ISD's
C. Colleges
D. Disciplines
E. Exemplars
F. Students
G. Government
H. Home & Public
I. Industry
J. Others
K. Economic Development

The Tech Prep models provide a commonly accepted representation of the Tech Prep activities in the field bringing conceptual organization to an ataxic field. This is extremely important as prior to the adoption of these models, there was no functional organization for Tech Prep activities. Consequently, it was difficult to exchange ideas, critique activities and objectively determine performance as there was no uniformity in definition and representation of the entire Tech Prep system. These documents, models, and analyses provide other services to Tech Prep stakeholders as well. It provides an archive that shows the essential documents as they exist.

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Introduction to the Tech Prep Handbook

The Organization of the Tech Prep Handbook. *The Tech Prep Handbook* is designed to provide practitioners in Tech Prep programs examples of essential plans, models, policies, and practices associated with the development and operation of Tech Prep programs in Texas. *The Handbook* has changed substantively in format and form over the past two years to meet the needs of Tech Prep stakeholders.

The first edition was cerlox-bound and organized by Dr. Pamela Cooper around the research findings of the SPECAP staff. The beginning edition was well-received by Tech Prep stakeholders because it documented the achievements of Tech Prep Consortia and their partners in the early stages of Tech Prep development. The first edition of the *Handbook* focused on the plans of the Tech Prep Consortia.

The initial *Handbook* was a 40-page document that provided an overview of the planning and implementation of Tech Prep programs in Texas. It identified six major impacts on Texas education, sketched a short history of the development of Carl Perkins legislation, described the role of SPECAP, provided a Tech Prep directors' validated model of the Tech Prep planning processes, pointed to a number of essential documents associated with the strategic planning for Tech Prep program development, and provided new ideas for the future development of Tech Prep. The first generation models are general representations of objects and processes in the Tech Prep system. These are the prototypes used to explain the activities of the Tech Prep stakeholders, descriptive models of the work of Tech Prep directors, school administrators, teachers, students, business partners, and governmental support services.

The first edition was acclaimed by Tech Prep stakeholders as a much needed publication and they encouraged the SPECAP staff to continue their scholarly efforts. Most importantly, the Tech Prep stakeholders encouraged the staff to expand the scope to the *Handbook* and to place it in a format that would allow for the deletion of obsolete material and the addition of new or innovative material. The documents in the *Handbook* are arranged according to impact areas.

The second edition contains loose-leaf documents organized in sections that correspond to the major impact sectors identified by the SPECAP Advisory Board. The major impact sectors are shown in Figure 1 on the next page. In the second edition, the editors are responding to requests from Tech Prep practitioners to provide them with examples of exemplary plans, essential documents, models of the curriculum development process, and an analysis of the Tech Prep impact on Texas education. As a consequence of requests for a source book for essential documents, each section of the *Handbook* contains samples of documents routinely used by the stakeholders.

Classifying Documents

The coding scheme attempts not only to provide a system to facilitate storage and retrieval of documents but also a means of improving communication among Tech Prep "insiders" and understanding by "newcomers" who are just becoming aware of the technical/vocational educational movement.

As we began our efforts to collect documents, it became evident that the legislative flexibility given the Tech Prep consortia to develop and implement programs to meet the unique needs of their communities challenged the ingenuity of the researchers in locating and securing documents that reflected the policies and practices being used by the consortia. Stakeholders from all of the sectors were contacted and requested to provide documents that they found to be effective and efficient in carrying out their mission to develop, implement, and evaluate Tech Prep programs.

A coding scheme was developed to classify the documents that were gathered. It is an organizing element that continues to be refined and the fields further define. The first coding position represents the sections. The sections of the handbook represent different stakeholders as well as the "language" of technical/vocational education through a glossary of terms.

The analysis and subsequent classification of the documents appeared to be another formidable task since the commonalities among diverse entities needed to be found. Innovative programs and creative solutions do not readily lend themselves to classification. After scouring the documents at hand and analyzing their content, it was found that "functions" emerged. These "functions" of documents are reflected in the second through fourth digits of the code. It has become evident that the "functions" can be further refined but this scheme is still under development; and, thus, digits five and six in the code are reserved and are not yet assigned.

It is through the partnerships among educational, business/industry, and governmental entities that the Tech Prep concept has become a reality -- a superb reality. Documents represent the commitments of these partnerships and the responsibilities delegated to each of the partners. Digits seven through twelve are intended to chronicle those partnerships.

History offers insight into the present. A timely response increases the probability of success. By incorporating the date of the document, the practitioner is able to evaluate the expediency of the document for use in their particular situation. Digits thirteen and fourteen indicate the document's year of publication or year the document was put into practice.

Since the *Handbook* may contain only excerpts of some documents (not reproduced in total), the final digits of the coding scheme reflect first, the total number of pages of the document contained in the handbook; and, second, serial page numbering to facilitate identification of document sequence. The documents in the November, 1996 *Handbook* are part of a continuing effort to consolidate and illuminate practices and process "that work!" The document coding scheme represents the thread that binds these policies and practices together. *Handbook* holders will be advised as the coding scheme is refined.

The *Handbook* is an encomium to the practitioners out in the field. We "Thank You" for sharing your triumphs -- all those documents that illustrate successful programs, processes, and practices --with us.

Coding Schemes

Sections ▬ Functions ● Not Assigned ▬ Origin/ Oversight, Impact 1, Impact 2, Impact 3, Impact 4, Keeper ● Last two digits of publication year. ▬ Total Number of Pages ● Document Page

A= Consortia
B= ISD
C= Colleges & Universities
D= Disipline
E= Emerging Efforts
F= Students
G= Government
H= Home & Public
I= Business/ Industry
J= Other
K= Economic Development
V= Glossary
W= Index
X= Undetermined
L-Y = Unassigned

000-009 Organizational Structure
010-019 Proposal
020-029 Plans
030-039 Processor for Practice
040-049 Register of Essential Knowledge
050-059 Monitoring of Practice
060-069 Reports on Practice
070-079 Agreements
080-089 Assesment of Performance
090-099 Locators

Not Assigned

a= Consortia
b= ISD
c= Colleges & Universities
d= Discipline
e= Emerging Efforts
f= Students
g= Government
h= Home & Public
i= Business & Industry
j= Other
k= Economic Development
l= All
x= Undetermined

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Inventory of Documents

1996 Handbook

Document ID:	A-0.09-a-1
Document	Directory: "Tech Prep Consortium Contact Persons/Directors/Secretaries"
Number of Pages:	012

Document ID:	A-0.10-a-1
Document	Map: "Governor's 24 Planning Regions"
Number of Page:	001

Document ID:	A-0.11-a-1
Document	Flow Chart: "Concho Valley Tech Prep Career Path: Business Technology"
Number of Pages:	001

Document ID:	A-0.11-b-1
Document	Flow Chart: "Tech Prep Intergenerational Professions Career Pathway"
Number of Pages:	001

Document ID:	A-0.61-a-1
Document	Report/Tech Prep Status Report (April 1996): "Education that Works"
Number of Pages:	031

Document ID:	A-1.12-a-1
Document	Memorandum: "1995-96 Tech Prep Funding"
Number of Pages:	001

Document ID:	A-1.13-a-1
Document	Agreement: "Request to Participate in Tech Prep Funding 1995-96" for Educational Institutions
Number of Pages:	008

Document ID: A-5.1-a-1

Document Brochure/Flyer: "World Class Graduates Through Tech Prep"

Number of Pages: 001

Document ID: A-5.2-a-1

Document Brochure/Flyer: Tech Prep Texas: "A Way to the Future for Your Teenager--Seven Facts Every Parent Should Know About Tech Prep"

Number of Pages: 001

Document ID: A-7.0-a-1

Document Articulation Manual: Chapter 8. "Articulation Process and Flow Chart"

Number of Pages: 005

Document ID: A-7.0-b-1

Document Tech Prep Articulation Agreement/ Nursing: "Upper Rio Grande Tech Prep Consortium and El Paso Community College"

Number of Pages: 003

Document ID: A-7.1-b-1

Document Advisement of Articulation Agreement/ Office Systems Technology Programs: "ISDs (San Antonio, Northside, Edgewood, La Vernia, Navarro, and Floresville) and Colleges (Palo Alto, San Antonio, and St. Phillip's)"

Number of Pages: 006

Document ID: C-23.10-a-1

Document Department of Criminal Justice/ Secretary's Commission on Achieving Necessary Skills (SCANS): "Workplace Competencies"

Number of Pages: 001

Document ID: C-23.10.1-a-1

Document Odessa College: "SCANS Program Certification Summary"

Number of Pages: 001

Document ID: C-24.01-a-1
Document Program Brochure: "Automated Manufacturing Technology"
Number of Pages: 002

Document ID: C-24.01-e-1
Document Curriculum Guide: "Industrial Electronics"
Number of Pages: 009

Document ID: C-26.31-a-1
Document Transfer Planning Guides: "Engineering Technology," "Industrial Technology (Construction)," "Industrial Technology (Manufacturing)," "Industrial Technology (Visual Communication)," & "Information Systems Management/BS in Technology"
Number of Pages: 005

Document ID: C-28.56-a-1
Document Program Evaluation Report: "Technical and Vocational Program Evaluation Report--El Paso Community College, March 6-8, 1991"
Number of Pages: 001

Document ID: D-28.10-a-1
Document Program Evaluation/ Table of Contents: "Self-Study Questionnaire for Review of Engineering Programs"
Number of Pages: 003

Document ID: D-30.30-a-1
Document Resource Guide: "Central Texas Tech Prep Consortium -- Teacher Resource Guide -- Applied Academics and Curriculum Integration"
Number of Pages: 003

Document ID: D-31.20-a-1
Document Position Paper: "DACUM and Tech Prep: Dynamic Duo"
Number of Pages: 012

Document ID: D-33.01-a-1
Document: Knowledge Structuring: " The Tunstall Model of the Structure of Knowledge for mathematics"
Number of Pages: 4

Document ID: D-33.02-a-1

Document Knowledge Structuring: "The Determination of the Validity, Usefulness, and Comprehensiveness of a Structure of Knowledge for the Nursing Discipline"

Number of Pages: 005

Document ID: D-34.01-a-1

Document Knowledge Register: "Mathematical Knowledge Registers for Tech Prep"

Number of Pages: 004

Document ID: D-37.51-a-1

Document Report/Nursing Education Advisory Committee Report, March 1993 (Volume I): "Essential Competencies of Texas Graduates of Education Programs in Nursing"

Number of Pages: 018

Document ID: D-37.52-a-1

Document Report/Nursing Education Advisory Committee Report, March 1993 (Volume II): "Nursing Manpower: Trends and Issues"

Number of Pages: 003

Document ID: D-37.53-a-1

Document Report/Nursing Education Advisory Committee, March 1993 (Volume III): "Executive Summaries"

Number of Pages: 005

Document ID: G-60.31-a-1

Document Legislation/S.143: "The Workforce Development Act of 1995"

Number of Pages: 002

Document ID: G-60.32-a-1

Document Legislation/H.R. 1617: "The Consolidated and Reformed Employment, Education and Rehabilitation Systems Act (CAREERS)"

Number of Pages: 002

Document ID: G-61.11-a-1

Document Request for Proposal (RFP)/ THECB: "Request for Proposals for Activities to Support the Carl D. Perkins Vocational and Applied Technology Education Act of 1990"

Number of Pages: 003

Document ID: G.61.30-a-1

Document Application for Proposal/THECB: "Grant Application for Tech Prep Implementation Projects"

Number of Pages: 006

Document ID: G-62.02-a-1

Document Announcement/Agenda for a Public Hearing Teleconference: "The State Plan for Vocational and Applied Technology Education: Strengthening the Plan for the Future"

Number of Pages: 002

Document ID: G-63.20-a-1

Document Guidelines/ THECB (January 1996, Table of Contents): "Guidelines for Instructional Programs in Workforce Education"

Number of Pages: 003

Document ID: G-65.11-a-1

Document Program Revision/ THECB: "Application for Program Revision/Description of Proposed New Courses"

Number of Pages: 005

Document ID: G-65.12-a-1

Document Program Revision/THECB: "Application for Approval of Revised Technical Programs -- Assurance of Certificate Standards"

Number of Pages: 001

Document ID: I-85.1-a-1

Document Survey/ Seguin ISD: "Survey of Guadalupe County Business and Industry Needs"

Number of Pages: 001

Document ID: I-89.0-a-1

Document Report/ TEA & TQWC (February 1996, Table of Contents): "1996 Regional Targeted Occupations for Texas"

Number of Pages: 002

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Document ID: I-89.1-a-1

Document Survey: "Coastal Bend Region 1993-94 -- Key Industries, Targeted Occupations & Critical Groups"

Number of Pages: 001

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Section A
Essential Tech Prep Consortium Documents

The Purpose and Use of Tech Prep Consortia Documents

In the early 1990s, the Texas Tech Prep Consortia were given the responsibility of articulating the efforts of a very fragmented Tech Prep enterprise. They have done this exceeding well. Today, the Consortia continue to promote the independence of their local units while creating specific partnerships that require a broad range of cooperation. After four years of operation, the Tech Prep Consortia are perceived by students, parents, teachers, principals, governmental representatives, and business leaders as the change agents needed to introduce and institutionalize much needed innovation in the very separate and highly independent educational systems of the region. The Tech Prep documents provide the communication links so necessary for cooperation among this large educational confederation.

The SPECAP staff has gathered and analyzed thousands of Tech Prep Consortia documents being used in the State of Texas today to advance the Tech Prep mission. They have interviewed and surveyed hundreds of Tech Prep stakeholders to determine the efficacy of these documents in daily operations. Also, they have made site visits to more than two-thirds of the Tech Prep regions to see first-hand that students are performing as the consortia have reported. Their comprehensive studies lead the SPECAP researchers to conclude that the Tech Prep Consortia of Texas may be the most significant educational reform mechanism since the establishment of the Land Grant Colleges.

The Texas Tech Prep Consortia are the products of a federal and state partnership to improve technical education throughout Texas and the nation. The Carl D. Perkins Act (1990), Title III, Part E -- the Tech Prep Education Act -- provided funds for the states to establish educational programs that can:

(1) increase the levels of skilled technicians needed to meet rapid technological advances and global competition,
(2) create effective strategies reaching beyond the boundaries of traditional schooling and involving early and sustained intervention by parents, teachers, and educational institutions in the lives of students,
(3) promote systematic technical education articulation agreements between secondary and post-secondary educational institutions,
(4) provide courses for youths to master skills in liberal and practical arts and in basic academics, including literacy instruction in the English language, and
(5) develop in students the technical preparation and attitude necessary for finding a position in a changing workplace (104 Stat. 789).

Assuming the Congressional intent, the State of Texas wanted to promote the development of Tech Prep programs at the local level; consequently, they issued Requests for

Proposals that would establish self-initiated Tech Prep Consortia throughout the state. Confederations of community colleges, Independent School Districts (ISDs), businesses, labor organizations, and local governments formed 25 Tech Prep Consortia that are providing technical and financial assistance to every school district and college in the State. In turn, the ISDs and colleges are expected to develop articulated Tech Prep programs that prepare students for technical jobs in the contemporary workforce.

The State of Texas has charged the Tech Prep Consortia to coordinate the planning for Tech Prep programs, to provide the necessary articulation services, and to assist in the daily operations of Tech Prep programs in their region. These are extremely difficult charges as the directors must work with several independent sectors that have had little experience in articulating efforts. Moreover, the Tech Prep directors are the coordinators for a vast number of regional program development activities that must occur in the separate public schools, in the departments of the cooperating community colleges, in diverse businesses, in a variety of local government agencies, and in the homes of hundred of students. The cement that holds these complementary activities together is a wide range of documents related to planning, and program articulation among the secondary schools and the various colleges.

Hundreds of different Tech Prep documents have been reviewed and analyzed for commonalties by the SPECAP staff and their advisory boards. From these commonalities, SPECAP has built a functional classification scheme that allows identified exemplary consortium documents and development processes to be included as exemplars in Section A. We have selected a few exemplary documents from a very large number of sources. SPECAP is pleased to exhibit the work of these innovators for we believe these essential and exemplary documents can assist others in advancing Tech Prep practices now and in the future. For example, the North Harris Montgomery College District Curriculum Office has developed an articulation manual that is superlative. We have borrowed liberally from their proven manual.

Also, the Texas Higher Education Coordinating Board (THECB) application documents and concomitant policy are recognized across the nation for their effectiveness in developing the Tech Prep program. Furthermore, it is important for stakeholders in the Consortia to understand that there are certain requirements for developing educational programs that must be observed if programs are to be approved by their cognizant agencies. For example, it is important for the community colleges and schools to develop programs that can gain THECB and Texas Education Agency (TEA) approval. Consequently, certain forms, which allow the THECB to assess the educational effectiveness of a program, are essential components in Tech Prep Consortia activities. New Tech Prep directors or college department heads may have no previous experience with THECB forms and policies related to Tech Prep programs. Exemplary documents become invaluable aids in helping ISDs and colleges in developing new programs and gaining THECB and TEA approval. The Consortium documents included in Section A have been tested and are of proven worth in actual practice.

Description of Documents in this Section

In Section A, the editors have attempted to identify and analyze the planning, curricula, and performance assessment documents essential to the development of Tech Prep programs. To facilitate the finding of materials, we have included a number of essential and exemplary documents in the SPECAP *Inventory of Tech Prep Documents*. Section A is devoted to directories and a series of sample documents used by the regional Tech Prep Consortia.

The Directory was included at the beginning of the Handbook as the names, addresses, and telephone numbers of Tech Prep consortia directors are vital to promoting the communications network necessary to cooperative Tech Prep development.

Maps showing the location of the consortia and schematics providing an overview of Tech Prep curriculum articulation and career pathways are included.

The *TECH PREP TEXAS STATUS REPORT, April 1996*, was edited by Dr. Carrie Hughes Brown, and is included in the section on reports as it is the best and most comprehensive report on the development of Tech Prep in Texas. This report provides a valid model of generic Tech Prep programs, summary of Tech Prep Programs by occupational areas, average federal consortium Tech Prep expenditures by major category, figures and data that show the increase in articulation agreements in participating agencies, a listing of Tech Prep supplemental projects, and a listing of data sources with annotations. The *Status Report* provides a comprehensive picture of Tech Prep by presenting a wealth of Tech Prep baseline data from thousands of sources. If one is searching for data summaries on the major components of Texas Tech Prep, the *Status Report* is the first place to look.

Proposal documents have a common format yet great variance of goals and activities. The *Regional Tech Prep Proposal to THECB* and *Alamo Tech Prep Proposal* were identified as exemplary proposals. They are exhibited in the Handbook for their present innovative features for Tech Prep development and clearness of exposition.

Articulation Agreements are the critical documents for cooperation among the separate entities of high schools, community colleges, and business. Several of the consortia have supplied samples of articulation agreements and have explained how they can be developed. These exemplary documents are included in this section.

Locator documents are necessary for TPC staff as they must communicate with other Tech Prep leaders throughout the country. We have set aside documents providing information about the Tech Prep Director's Association of Texas and the National Tech Prep Network.

TECH-PREP CONSORTIUM CONTACT PERSONS/DIRECTORS/SECRETARIES

ALAMO Debra Nicholas Director Alamo Consortium 1300 San Pedro San Antonio, TX 78212 210-733-2093 210-733-2095 (FAX) dnichola@accdvm.accd.edu	Allen Townsend Curriculum Specialist 210-733-2094 210-733-2095 (FAX) ATOWNSEN@ACCDVM.ACCD.EDU	Mary Carroll Secretary II 210-733-2092 210-733-2095 (FAX) MCARROLL@ACCDVM.ACCD.EDU
BRAZOS VALLEY Mary Markowich Director Blinn College 301 Post Office Street Bryan, TX 77801 409-821-0207 or 0217 409-821-0218 (FAX) MMarkowi@tenet		
CAPITAL Dr. Cassy Key Executive Director Capital Area TP Consortium 5930 Middle Fiskville Road Austin, TX 78752 512-223-7720 512-483-7857 (FAX) cassy@tenet.edu		Karoline Gebert Administrative Assistant 512-223-7825 512-483-7857 (FAX) cassy@tenet.edu
CENTRAL TEXAS Jimmy Roberts Project Director 2600 South First Street Temple, TX 76504 817-773-9961 817-773-7043 (FAX) 817-773-7841 (Alternate) jdrob@tenet		Julia Rogers Administrative Assistant 817-773-9961 817-773-7043 (FAX) 817-773-7842 (Alternate)

August 18, 1996

TECH-PREP CONSORTIUM CONTACT PERSONS/DIRECTORS/SECRETARIES

COASTAL BEND Allan Meriwether Director 101 Baldwin Corpus Christi, TX 78404 512-886-1787 512-886-1825 (FAX) meriweth@tenet.edu		Cheryl Wheeler Administrative Assistant 512-886-1787 512-886-1825 (FAX)
CONCHO VALLEY Mark Butler Director 3197 Executive Drive San Angelo, TX 76904 915-947-9552 915-947-9529 (FAX) dpoulson@tenet.edu		Carol Burk Para Professional 915-947-9552 915-947-9529 (FAX) Burk@tenet.edu
DEEP EAST TEXAS Carol K. Jones Director Angelina College P.O. Box 1768 Lufkin, TX 75902 409-633-5307 409-633-5372 (FAX) cjones@tcac.Com		
EAST TEXAS Doris Sharp Director The University of TX at Tyler 3900 University Blvd. Tyler, TX 75701-6699 903-566-7353 903-566-4281 (FAX) dsharp@tenet.edu doris-sharp.UT-Tyler@ notes.worldcom.com		Gayle Ferrell Asst... to the Director 903-566-7319 903-566-4281 (FAX) gayle-ferrell.UT-Tyler @ notes.worldcom.com

TECH-PREP CONSORTIUM CONTACT PERSONS/DIRECTORS/SECRETARIES

GLOBAL EDGE Sylvia Kelley Director 2200 West University Drive Rm. B, 331 McKinney, TX 75070 214-548-6724 214-548-6726 (FAX) skelley@fs7host. ccccd.edu	Linda Shoup Curriculum Specialist 214-548-6725 214-548-6726 (FAX)	Connie Cantrell Project Assistant 214-548-6723 214-548-6726 (FAX)
GOLDEN CRESCENT Roger Johnson Golden Crescent Tech-Prep c/o The Victoria College 2200 East Red River Victoria, TX 77901 512-572-6477 512-572-6439 (FAX) 512-572-6419 (Alternate) rjohnson@vc.cc.tx.us	David Green Tech-Prep Transition Coordinator 512-572-6458 512-572-6439 (FAX) 512-572-6419 (Alt) dgreene@vclinux.vic.uh.edu	Marjorie Anders Administrative Assistant 512-572-6459 512-572-6439 (FAX) 512-572-6419 (Alt. FAX)
GULF COAST Eileen Booher Director 250 North Sam Houston-East Houston, TX 77060 713-591-3531 713-591-3578 (FAX) eileen@mail.nhmccd.cc.tx.us	Becky Colvin Project Specialist 713-591-3524 713-591-3578 (FAX) beckyc@mail.nhmccd.cc.tx.us	Open Secretary 713-591-9310 713-591-3578 (FAX)
HEART OF TEXAS Jewel Lockridge Director 1400 College Drive Waco, TX 76708 817-750-3722 817-750-3723 (FAX) jlock@tenet.edu	Charlotte Roppolo Curriculum Coordinator 817-756-6551 Ext 217 817-750-3723 (FAX)	Jan Ferguson Technician 817-750-3723 817-750-3723 (FAX)

TECH-PREP CONSORTIUM CONTACT PERSONS/DIRECTORS/SECRETARIES

LOWER RIO GRANDE VALLEY Pat Bubb Executive Director TSTC Conference Center 2424 Boxwood Harlingen, TX 78550-3697 210-425-0728 210-425-0797 (FAX) pbubb@tenet.edu	Sheila Pankratz Assistant Director/ Curriculum Specialist South Texas Com College Bldg. C 3201 West Pecan McAllen TX 78501 210-618-8392 210-618-8388 (FAX) svalles@main.rgu.net	Doreen Kube Administrative Secretary 210-425-0779 210-425-0797 (FAX)
NORTH CENTRAL TEXAS Rodney Wetterskog Project Director 701 Elm Street, Room 205 Dallas, TX 75202 214-860-2420 214-860-2039 (FAX) rxw1662@dcccd.edu	Irma E. Brown Project Assistant 214-860-2425 214-860-2006 (FAX) ifb1662@dcccd.edu	
NORTH TEXAS Romona Vaughan Director 4105 Maplewood Wichita Falls, TX 76308 817-696-8752 EXT 249 817-696-3244(FAX) rvaughan@tenet.edu		Penny Greeno Secretary 817-696-8752 EXT 250 817-696-3244 (FAX) pgreeno@tenet.edu
PANHANDLE Lisa Bentley Curriculum Coordinator 806-354-4737 806-354-47-35 (FAX)	LeAnne Vogel Director 7200 I-40 West, Rm. 344 Amarillo, TX 79106 806-354-4274 806-354-4735 (FAX)	Peggy Boehm Secretary 806-354-4399 806-354-4735 (FAX)

August 18, 1996

TECH-PREP CONSORTIUM CONTACT PERSONS/DIRECTORS/SECRETARIES

PERMIAN BASIN Barbara Brumley Director Midland College 3600 N,. Garfield Midland, TX 79705 915-685-4669 915-685-6472 (FAX)	Fitz Husbands Curriculum Specialist 915-685-6491 915-685-6472 (FAX)	Monica Reyes Administrative Secretary 915-685-6492 915-685-6472 (FAX)
SOUTHEAST TEXAS Ray Brown Director John Gray Center 855 Florida Avenue Beaumont, TX 77705 409-880-8454 409-880-1733 (FAX)	Kimberly Pope Administrative Assistant for 1996 State Conference 409-654-6425 409-833-9755 (FAX)	Lois Benoit Administrative Technician 409-880-8455 409-880-1733 (FAX) benoila@lub002.lamar.edu P.O. Box 10160 Beaumont TX 77710-0160
SOUTH PLAINS Stephanie Stone Director South Plains College 1302 Main Street Suite 409 Lubbock, TX 79401 806-744-6477 or 747-0576 ext 4688 806-765-2786 (FAX) or 806-765-2775 (FAX) smstone@tenet.edu	Sue Ann Miller Curriculum Specialist 806-744-6477 or 806-747-0576 EXT 4690 806-765-2786 (FAX) or 806-765-2775 (FAX)	
SOUTH TEXAS Luis de la Garza, Jr. Director Laredo Community College West End Washington Street Laredo, TX 78040-4395 210-721-5165 210-721-5393 (FAX) luisgza@icsi.net	Beatriz Salinas Curriculum Specialist. 210-721-5165 210-721-5393	Yolanda Machuca Secretary 210-721-5165 210-721-5393 (FAX)

TECH-PREP CONSORTIUM CONTACT PERSONS/DIRECTORS/SECRETARIES

STAR TECH-PREP Mayra P. Bass Director Southwest Texas Jr. College 2401 Garner Field Road Uvalde, TX 78801-6297 210-591-7264 210-591-4182 (FAX)		Suzanne McCormack Administrative Assistant 210-591-7262 210-591-4182 (FAX)
TEXOMA Jan Crews Director Grayson County College 6101 Grayson Drive Denison, TX 75020 903-463-8754 903-463-5284 (FAX) jcrews@tenet.edu	Judy Carter Assistant 817-668-7731 817-668-6049 (FAX)	Betty Fennell, Secretary (GCC) 903/463-8654 903/463-5284 (FAX) Kelly Brannan, Secretary (NCTC) 817-668-7731 817-668-6049 (FAX)
UPPER EAST TEXAS Eugenia Jones Director P.O. Box 1307 Mount Pleasant, TX 75455 903-656-2141 903-656-3315 (FAX) eugeniat@tenet.edu	Dr. Wanda Schindley Curriculum Specialist 903-656-2141 903-656-3315 (FAX)	Melanie Chapman Secretary 903-656-2141 903-656-3315 (FAX)
UPPER RIO GRANDE VALLEY Holly Woelber Director 1155 Westmoreland Ste 207 El Paso, TX 79925 915-774-0076 or 0077 915-774-0747 (FAX) ab105@rgfn.epcc.edu		Shay Tarter Administrative Assistant 915-774-0076/0077 915-774-0747 (FAX)

WEST CENTRAL TEXAS Dr. Bill Watkins Director 809 North Judge Ely Abilene, TX 79603 915-672-5633 800-457-5633 915-672-4443(FAX) wcttpc@aol.com	Lori Cameron Curriculum Transition Coordinator 915-672-5633 800-457-5633 915-672-4443(FAX) wcttpc@aol.com	Tina Melendez Administrative Assistant 915-672-5633 800-457-5633 915-672-4443(FAX)

TECH-PREP RELATED PROJECTS

1. **"Tech-Prep/School-to-Work Joint State Conference"**

Ray Brown
Region V Education Service Center
2295 Delaware Street
Beaumont TX 77703
409 - 654-6425
409 - 833-9755 (FAX)

2. **"Tech-Prep/School-to-Work Initiative Management Project"**

Carrie Brown
Region V Education Service Center
2295 Delaware Street
Beaumont TX 77703
409 - 875-3823
409 - 833-9755 (FAX)

3. **STARLINK Teleconference: "Tech-Prep: Working Outside the Lines"**

Ron Thomson, STARLINK Director
Austin Community College
7748 Highway 290 W
Austin TX 78736
512 - 288-8027
512 - 288-8011 (FAX)

4. **"Effective Policies and Practices in Selected Career Fields"**

Dr. Ronald D. Opp
Texas Tech University
P. O. Box 41071
Lubbock, TX 79409-1071
806 - 742-2329
806 - 742-2179 (FAX)

5. **"Improved Career Decision Making (ICDM)"**

Dr. Bill Witter
102 W. Rampart, R-103
San Antonio TX 78216
210 - 344-1972
512 - 502-3750 Austin SOICC office phone

6. **"TQM/Tech Prep Professional Development"**

David E. Leigh
Temple Junior College
2600 South First Street
Temple TX 76504
817 - 773-9961
817 - 773-7043 (FAX)

7. **"Intermediate & College Algebra Applied Methodology & Accelerated Learning"**

Harvey Fox
Texas State Technical College
East Texas Center at Marshall
P. O. Box 1269
Marshall TX 75671
903 - 935-1010
903 - 935-9554 (FAX)

8. **"English Applied Methodology"**

Paul Beran
1400 College Drive
McLennan Community College
Waco TX 76708
817 - 750-3506
817 - 750-3754 (FAX)

9. "Articulation of Career Guidance Programs for Tech-Prep and Educational Career Pathways"

Jessie Teddlie
University of North Texas
P. O. Box 5248
Denton TX 76203
817 - 565-4109
817 - 565-4348 (FAX)

10. Work-based Industry Personnel Training (WIPT)

Holly Woelber
Upper Rio Grande PIC
1155 Westmoreland, Suite 235
El Paso TX 79925
915 - 774-0076
915 - 774-0747 (FAX)

11. "School-to-Work Hospitality Coordination"

Marilyn Wragg
Texas Tech University
203 Holden Hall
Lubbock TX 79409-1035
806 - 742-3029
806 - 742-3034 (FAX)

12. "State-Wide Evaluation of Tech Prep Programs"

Micah Dial
Evaluation & Data Analysis Service, Inc.
800 Post Oak, # 34
Houston TX 77056

713 - 871-9349	Phone
713 - 1-800-403-5362	Voice Mail
713 - 877-1964	FAX
713 - 718-8625	HCC Phone

13. "Project SCORE (School and Community Offering Resources for Employment)"

Stephanie Ingram
Collin County Community College
2200 West University
McKinney TX 75070
214 - 569-6155
214 - 548-6805 (FAX)

TRI-AGENCY PARTNERSHIP CONTACTS

TEXAS HIGHER EDUCATION COORDINATING BOARD

Ken Tunstall
Director, Workforce Education
Community and Technical Colleges
Texas Higher Education Coordinating Board
7745 Chevy Chase Drive, Building V
P.O. Box 12788
Austin, TX 78711
512/483-6250
512/483-6444 (FAX)
TunstallPL@thecb.state.tx.us

Ron Curry
Program Director
Community and Technical Colleges
Texas Higher Education Coordinating Board
7745 Chevy Chase Drive, Building V
P.O. Box 12788
Austin, TX 78711
512/483-6250
512/483-6444 (FAX)
CurryRN@thecb.state.tx.us

Yvette Villatoro
TP/STW Grant Coordinator
Villatorye@thecb.state.tx.us
Same address & phone/fax numbers

Arturo Villarreal
Contract Technician II
Villarreat@thecb.state.tx.us
Same address & phone/fax numbers

✓ Rob Bocanegra
Associate Program Director
BocanegrRB@thecb.state.tx.us
Same address & phone/fax numbers

Laura Radler
Administrative Secretary
RadlerLA@thecb.state.tx.us
Same address & phone/fax numbers

TEXAS EDUCATION AGENCY

Paul Lindsey
Coordinator
Texas Education Agency
1701 N. Congress Avenue
Austin, TX 78701
512/463-9322
512/305-9493 (FAX)

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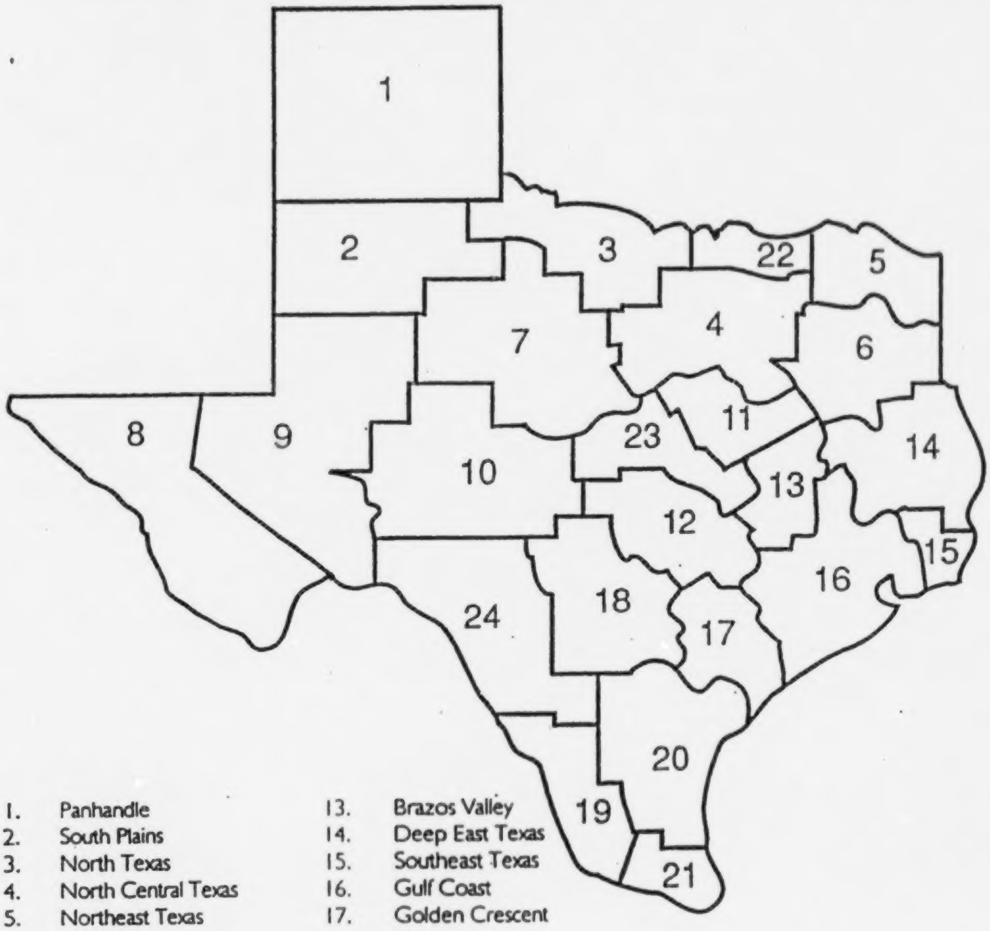
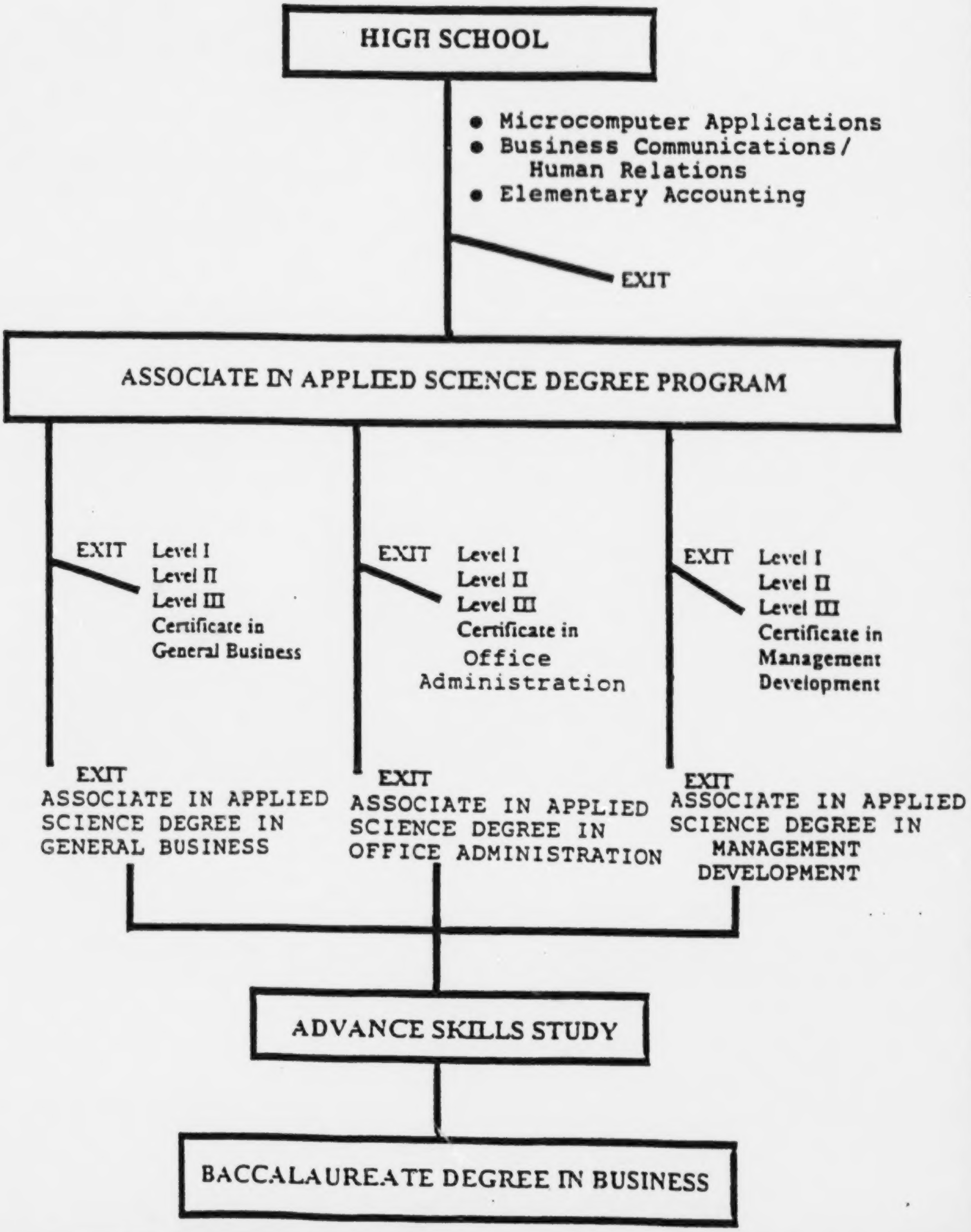
August 18, 1996

GOVERNOR'S 24 PLANNING REGIONS



1. Panhandle
2. South Plains
3. North Texas
4. North Central Texas
5. Northeast Texas
6. East Texas
7. West Central Texas
8. Upper Rio Grande
9. Permian Basin
10. Concho Valley
11. Heart of Texas
12. Capital Area
13. Brazos Valley
14. Deep East Texas
15. Southeast Texas
16. Gulf Coast
17. Golden Crescent
18. Alamo
19. South Texas
20. Coastal Bend
21. Lower Rio Grande
22. Texoma
23. Central Texas
24. Middle Rio Grande

CONCHO VALLEY TECH PREP CAREER PATH
BUSINESS TECHNOLOGY


HIGH SCHOOL
• Microcomputer Applications
• Business Communications/ Human Relations
• Elementary Accounting
EXIT
ASSOCIATE IN APPLIED SCIENCE DEGREE PROGRAM
EXIT
Level I
Level II
Level III
Certificate in General Business
EXIT
Level I
Level II
Level III
Certificate in Office Administration
EXIT
Level I
Level II
Level III
Certificate in Management Development
EXIT
ASSOCIATE IN APPLIED SCIENCE DEGREE IN GENERAL BUSINESS
EXIT
ASSOCIATE IN APPLIED SCIENCE DEGREE IN OFFICE ADMINISTRATION
EXIT
ASSOCIATE IN APPLIED SCIENCE DEGREE IN MANAGEMENT DEVELOPMENT
ADVANCE SKILLS STUDY
BACCALAUREATE DEGREE IN BUSINESS

Tech Prep Intergenerational Professions Career Pathway

SECONDARY EDUCATION

ASSISTANT
(High School Diploma)

- ✦ Adult Care Aide/Special Needs
- ✦ Adult Care Assistant
- ✦ Elder Care Aide
- ✦ Well-Elder Services Assistant
- ✦ Home Care Assistant (Home Maintenance Assistance)
- ✦ Child Care Assistant/Special Needs
- ✦ Child Care Assistant/Infant-Toddler Care
- ✦ Child Care Assistant/Pre-school Child Care
- ✦ Child Care Assistant/ School-age Child Care

FUNDAMENTAL SKILLS COMMON TO CHILD AND ADULT CARE AND SERVICES OCCUPATIONS

ASSOCIATE
A.A.S. or certification

- ✦ Adult Activities Coordinator
- ✦ Child Care Activities Coor.
- ✦ Preschool Teacher
- ✦ Assoc. Teacher/Infant-Toddler
- ✦ Assoc. Teacher/Preschool Child
- ✦ Assoc. Teacher/School-age Child
- ✦ Assoc. Teacher/Special Needs
- ✦ School-age Care Coordinator
- ✦ Social Services Aide
- ✦ Social Work Associate
- ✦ Certified Nanny
- ✦ Leisure Services Associate
- ✦ Teacher Aide

DIRECTOR/SPECIALIST
(Public or Private Sector)
Additional training, specialization, or experience

- ✦ Child Care Center Director/ Administrator
- ✦ Adult Day Care Director
- ✦ Elder Services Director
- ✦ Director of Home Care Agency
- ✦ Social Services Worker/ Case Manager
- ✦ Hospice Case Manager
- ✦ Volunteer Coordinator/ Specialist
- ✦ Parenting Specialist
- ✦ School-age Care Program Director

PROFESSIONAL
(Baccalaureate and post-baccalaureate degrees)

- ✦ Elder Services Administrator
- ✦ Retirement Facility Administrator
- ✦ Early Childhood Certified Teacher
- ✦ Certified Social Worker
- ✦ Gerontologist
- ✦ Certified Special Education Teacher
- ✦ Home Economics Teacher
- ✦ Adult Education Teacher
- ✦ Public Policy Administrator
- ✦ Professional Home Economist (Extension, etc.)
- ✦ Elementary Teacher
- ✦ Long-term care facility Administrator
- ✦ Qualified Mental Retardation Professional (Q.M.R.P.)
- ✦ Lifelong Learning Program Director
- ✦ Leisure Services Director
- ✦ Teen Parenting Center Coordinator
- ✦ Child Life Specialist (hospitals, military)

A-0.11-b-1

Home Economics Curriculum Center
Texas Tech University June, 1994

TECH-PREP ☆ TEXAS

Education that Works

STATUS REPORT
April 1996

A Snap-Shot of the Impact of the Tech-Prep Initiative in the Governor's 24 Planning Regions

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Region V Education Service Center
2295 Delaware Street
Beaumont, Texas 77703-4299
(409) 838-5555, FAX (409) 833-9755

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I. BACKGROUND INFORMATION

Introduction

This *Status Report* is designed to show the progress and impact (*from July 1991 to March 1996*) of the development of 25 regional tech-prep consortia within the Governor's 24 planning regions, and to emphasize the importance of maintaining this grass-roots effort.

Tech-prep in Texas is designed to be an integral part of a consolidated system of work force development that provides life-long education and training opportunities for all children, youth, and adults. Tech-prep contributes directly to the development of this system by offering public school students, *regardless of their skill level, economic status, or geographic location*, a first-chance for achievement of basic, academic, technical, and workplace skills that prepare for the jobs of tomorrow, and increased opportunities for postsecondary education and training.

During the first four and one-half years of federal funding for tech-prep, the 25 regional tech-prep consortia, their representatives, and state leaders have:

- ✩ established an extensive network of secondary and postsecondary teachers, counselors, and administrators;
- ✩ formed hundreds of linkages with small and large businesses and industries, and labor organizations;
- ✩ formed working relationships with the job training partnership/private industry council system, the regional quality work force planning committees, community-based and civic organizations, and local, regional and state agencies and associations;
- ✩ established improved vocational and technical programs of instruction in public schools and colleges that connect learning to the realities of the workplace;
- ✩ narrowed the gap between secondary and higher education for more students; and
- ✩ established policies and procedures that assimilate tech-prep philosophy and processes with the day-to-day operations of public schools and colleges.

As a result, the impact of the tech-prep initiative in Texas is widespread, and the potential cost savings for participating high school students who no longer must pay college tuition, fees, and related costs for duplicate course material, or for academic remediation, can only be estimated.

The profiles of tech-prep development in each of the state's diverse planning regions outlined in this report do not adequately represent the immense contribution of the thousands of tech-prep consortium members to the development of a seamless, affordable, and responsive statewide system of work force education and training for Texas.

MISSION STATEMENT: TECH-PREP ☆ TEXAS

adopted by the Tech-Prep Directors' Association of Texas, June 1993

The mission of tech-prep in Texas is to forge partnerships within communities which foster high-performance education processes with access and support for all people.

Tech-prep will result in:

an academically and technically skilled workforce;
increased career choices:
enhanced quality of life;
economic security for communities and their citizens; and
an ability to adapt to the future.

Carl D. Perkins Vocational and Applied Technology Education Act of 1990, Part E, SEC. 347. (3)

The term 'tech-prep education program' means a combined secondary and postsecondary program which (A) leads to an associate degree or 2-year certificate; (B) provides technical preparation in at least one field of engineering technology, applied science, mechanical, industrial, or practical art or trade, or agriculture, health, or business; builds student competence in mathematics, science and communications (including through applied academics) through a sequential course of study; and (D) leads to placement in employment.

Tech-Prep: Educational Goals for Economic Growth

Tech-prep allows local control and flexibility in the selection and development of work force education programs within a state framework for reform.

The goals of this collaborative process are:

Goal 1	To contribute the cornerstones of an integrated system of education and training services that ensure all students acquire basic academic and employment skills through collaborative efforts of grass-roots partnerships committed to long-term, systemic change.
Goal 2	To demonstrate responsiveness to the needs of business, industry, and labor, and to advances in technology, and to provide productive employees, by cooperative program development and design.
Goal 3	To make higher education in Texas more affordable and accessible to Texas' public school and college students through seamless options and opportunities.
Goal 4	To provide appropriate pre-service and in-service professional staff development for all sectors for continuous improvement of instruction.
Goal 5	To improve student achievement and retention, and to evaluate student progress and employer satisfaction, for continuous improvement of the work force.
Goal 6	To inform the citizens of Texas of educational and employment opportunities, to market programs, and to inform and recruit students through individualized career guidance and counseling.

Benchmarks toward attainment of these long-range goals are suggested throughout the data in this report, particularly in the areas of:

- ☆ program development and implementation;
- ☆ consortium organization and governance; and
- ☆ federal funding.

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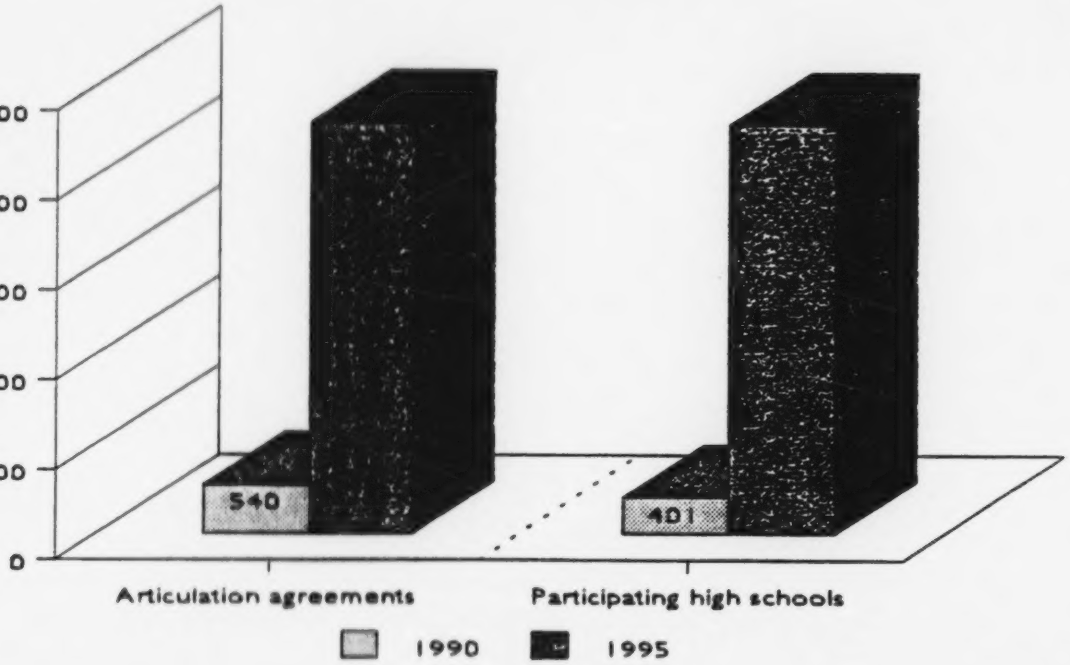
Articulation Agreements and Tech-Prep Program Development

The number of articulation agreements among community and technical colleges and independent school districts, as well as the number of participating high schools, increased dramatically since implementation of the tech-prep initiative in 1991.

> **The potential cost savings for Texas families:** *If one-half of the current tech-prep secondary school enrollment of approximately 50,000 students articulates a single 3 semester credit hour course (approximate tuition $100), the savings is $2,500,000. A decrease in necessary academic remediation will result in additional savings.*

(Articulation agreements include those associated with tech-prep programs and other forms of course articulation. High school count is duplicate as most colleges articulate programs with the same high schools in the region.)

FIGURE 1 - Increase in Articulation Agreements and Participating High Schools (1990 - 1995)



Although tech-prep features this cost- and time-saving incentive, tech-prep is more than articulated courses and programs.

Tech-prep is employer driven

- ☆ Each tech-prep consortium represents a collaborative partnership led by a governing board with significant representation and active participation of regional business and industry.
- ☆ School-based and work-based curricula in tech-prep programs are designed with employer input to ensure that employers get employees with the required basic, technical, and workplace skills.

Tech-prep is universally available

- ☆ All independent school districts and colleges in Texas have access to a tech-prep consortium office, and tech-prep programs and consortium services are available to all interested institutions. A state policy of 'no artificial boundaries' allows any college in Texas the opportunity to offer articulated programs in conjunction with any public school across the state.
- ☆ Tech-prep programs target the traditional non-four-year college bound student, but are available to, and offer high standards of achievement for, *all students*. Comprehensive career guidance and counseling, and student support services, assist in selection of, and success in, a career major.

Tech-prep is locally designed and implemented

- ☆ Each consortium designs its own unique delivery plan based on regional economic needs, and each program targeted for tech-prep is identified using current labor market information provided by state and regional labor market analysts.
- ☆ Professional development is provided and/or coordinated by consortium staff to make sure teachers, counselors, administrators, and others, have the skills they need to be effective.

Tech-prep provides for a seamless, lifelong learning opportunity

- ☆ Tech-prep programs offer a smooth transition between high schools, colleges, apprenticeships, and universities, by developing and implementing non-duplicative curricula that are relevant to life and work. Tech-prep programs emphasize development of skills that are useful throughout life.

Tech-prep programs are measurable and accountable for short and long-term results

- ☆ Tech-prep programs are positioned to fully participate in student achievement, follow-up, and employer satisfaction studies conducted regionally and statewide.

Planning Regions and Tech-Prep Consortia

Each tech-prep consortium organized and developed individually, displaying unique responses to local and regional geographic, demographic, and economic needs, while operating within a framework of state and federal guidelines.

At least one tech-prep consortium is closely associated with each of the Governor's 24 planning regions, although consortial partnerships extend beyond these regional boundaries.

The planning region organization provides a base for obtaining regional labor market information, and provides boundaries used for distribution of consortium funds to schools and colleges. Program articulations and consortium services operate without regard to these boundaries.

TABLE 1 - Average Size of Planning Regions

The average size of planning regions in Texas is 11, 257 square miles and 10.6 counties.

The range is -

> from the urban, 3 county region (2,154 square miles) of Southeast Texas, Planning Region 15,
>
> to the predominantly rural, 26 county region (25,825 square miles) of the Panhandle, Planning Region 1.

The average 1993 regional population of planning regions is 748,345.

The range is -

> from the sparsely populated agricultural base of the Middle Rio Grande Valley with a total population of 143,089, Planning Region 24,
>
> to the Dallas-Fort Worth metroplex in North Central Texas with a total population of 4,362,547, Planning Region 4.
>
> - ✩ 16 planning regions have populations of 500,000 or less;
> - ✩ 3 have populations of 1,000,000 or more.

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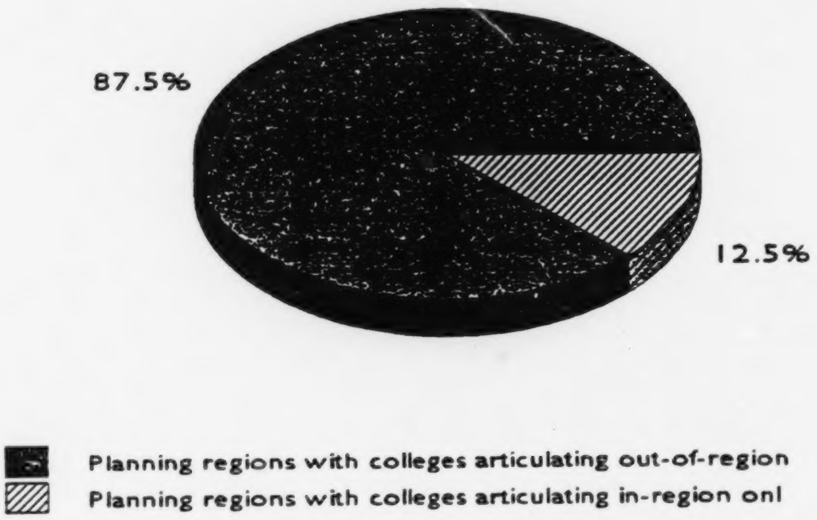
FIGURE 2 - Per Cent of Planning Regions with Colleges with Tech-Prep Programs Beyond the Associated Planning Region



21 of 24 planning regions (88%) have colleges within the region that offer state-approved tech-prep programs outside of the region, with independent school districts in 23 of 24 planning regions (96%).

This cross-regional and cross-consortial articulation, actively encouraged by the state's tri-agency partnership, enhances student transfer and contributes to the development of a comprehensive statewide system of educational programs.

Almost 150 independent school districts are involved in this cross-boundary program articulation in 89 Texas counties.

Contributions of Tech-Prep to Sustainable Education Reform in Texas

Tech-prep program development efforts in each planning region have resulted in numerous statewide contributions to the work force education process.

These include:

- ☆ Adoption of joint guidelines - the Texas Higher Education Coordinating Board and the Texas Education Agency adopted joint guidelines for tech-prep program approval that provide for local flexibility within a basic state framework of program standards.
- ☆ Degree and certificate designation - the Texas Higher Education Coordinating Board approved the tech-prep designation for associate degree and apprenticeship programs, and officially recognized the enhanced skills certificate as a new credential.
- ☆ Recommended high school program - the State Board of Education recognized tech-prep as one option in the recommended high school program of study, and included tech-prep as one possible avenue to earn a high school distinguished achievement award.
- ☆ Texas Scholars Program - the Texas Business and Education Coalition adopted the tech-prep graduation option as one method to achieve recognition under the Texas Scholars Program.
- ☆ Student identification - the Texas Education Agency assigned a tech-prep student identification code for the PEIMS data collection system, and provided a standard definition of a tech-prep student. This code, and the Texas Higher Education Coordinating Board's student identification code, will assist in assessment of student achievement and follow-up through the Student and Adult Learner Follow-up System (of the State Occupational Information Coordinating Committee.)
- ☆ Transcript code - the Texas Education Agency adopted a code for high school transcripts that identifies articulated courses to enhance the transfer of articulated credit to community and technical colleges statewide.
- ☆ Course catalogs - tech-prep programs, and other methods of receiving articulated course credit, are regularly described in course catalogs of independent school districts and colleges across the state.
- ☆ Career pathways - the Career and Technology Division of the Texas Education Agency included tech-prep career pathways in the standard application for federal vocational education funds.

II. STATE PROFILE:
The Impact of Tech-Prep on Educational Institutions in Texas

The following pages provide a summary of the impact of the first four and one-half years of tech-prep planning and development on educational programs offered, primarily, in Texas' public independent school districts and public community and technical colleges.

The data provided includes a summary of the individual planning region profiles found in part III of this report.

State Agency Management

The state's tri-agency management structure for quality work force planning was expanded for tech-prep. Although the Texas Higher Education Coordinating Board serves as fiscal agent for all federal tech-prep funds, all state-level policy decisions for the development of tech-prep were coordinated by representatives of all three agencies.

There are currently three FTE's supported by tech-prep funds at the Texas Higher Education Coordinating Board, and contracts with the Texas Education Agency and the Texas Department of Commerce have provided financial support for tech-prep staff at these agencies.

Consortium Governance and Organization

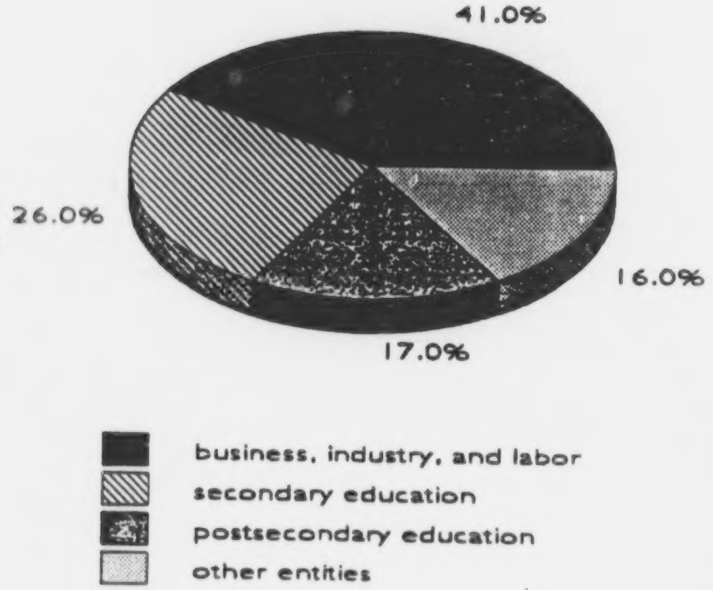
Tech-prep consortia are governed by boards composed of representatives from both the public and private sectors reflecting the grass-roots nature of the initiative.

The over 660 total members represented on the 1995-1996 governing boards of tech-prep consortia represent only a fraction of the thousands of regional representatives who have worked to implement tech-prep processes and programs across the state.

The majority of tech-prep consortium federal grants in Texas (84%) are managed by community and technical colleges; the remainder are managed by universities, a council of governments, and a private industry council.

Tech-prep consortia operate with minimal staff, averaging two professional and one support staff per consortium. Statewide totals are 49.5 FTE professional staff and 28.8 FTE support staff. Professional staff act as field agents, providing technical assistance, professional staff development, curriculum development assistance, program marketing, and other services to member institutions, in addition to administrative duties.

FIGURE 3 - Tech-Prep Consortium Governing Board Membership by Category



Statewide, 41% of governing board members represents business, industry, and labor, and 43% represents public schools, community and technical colleges, universities, and other educational institutions.

16% of governing board members, designated as "other", represents such diverse groups as parents and students, state and local government, quality work force planning committees, private industry councils, councils of governments, and community-based organizations.

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History of Tech-Prep Federal Funding

Tech-prep courses and programs are funded with state and local funds. Although the primary source of funds for tech-prep consortium activities, services, and staff is federal, tech-prep programs are developed and implemented because of the ability of consortium members to leverage local, state, and additional federal funds to improve existing programs and to develop new educational opportunities for Texas' students.

Tech-prep consortia also receive financial support from contributions such as: donated housing, meeting space, utilities, and services; in-kind contributions which include use of institutional funds to support program and professional development; and cash donations.

Federal Program Year 1991-1992

☆ Planning RFP released 3/28/91. 23 planning proposals submitted; 20 proposals funded. Total award of $997,026 (average award, $49,851). Effective dates: 7/1/91 to 2/28/92

☆ Implementation RFP released 10/30/91. 25 implementation proposals submitted; 18 proposals funded. Total award of $3,550,000 (average award, $197,222). Effective dates: 1/15/92 to 6/30/92

Federal Program Year 1992-1993

☆ 18 consortia received continued funding with an average award of $398,941 that included prior years' carryover funds. 7 additional consortia received an average of $179,676 for initial implementation. Total award for all consortia was $8,438,667. Effective dates: 7/1/92 to 6/30/93

Federal Program Year 1993-1994

☆ 25 consortia received continued funding with an average award of $326,073 that included prior years' carryover funds. Total award $8,151,820. Effective dates: 7/1/93 to 6/30/94

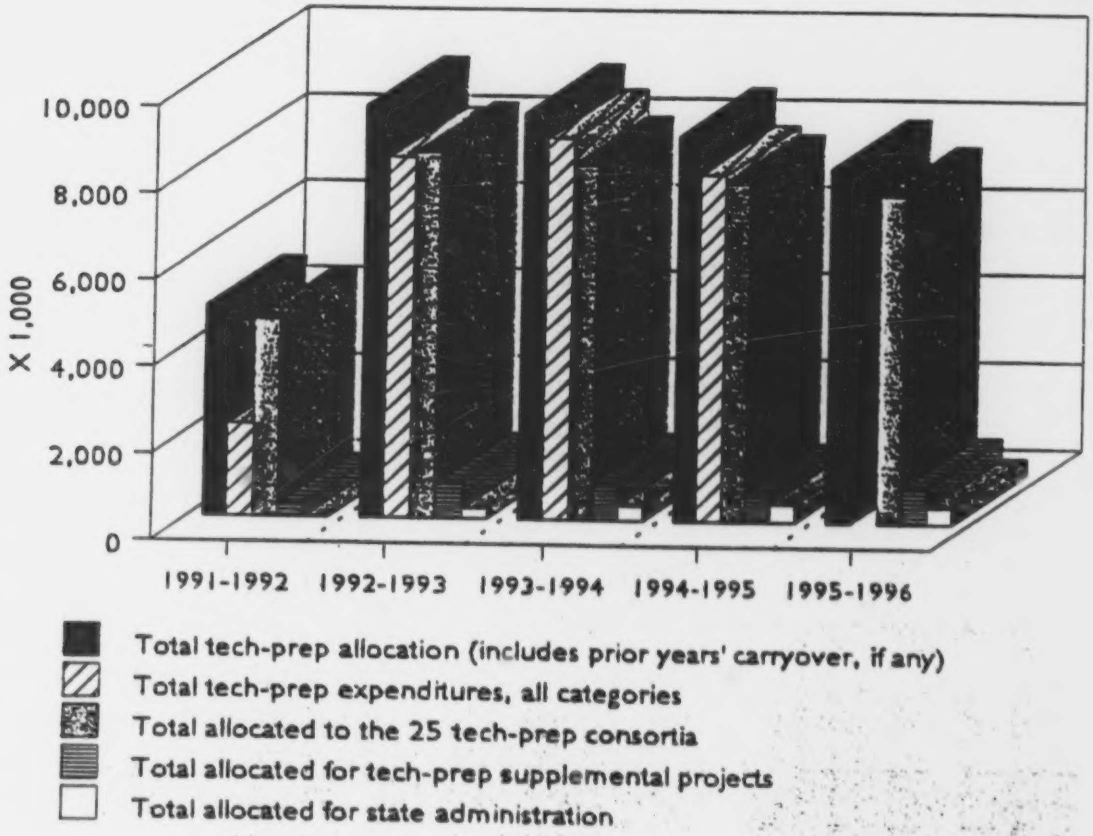
Federal Program Year 1994-1995

☆ 25 consortia received continued funding with an average award of $310,952 that included prior years' carryover funds. Total award $7,773,788. Effective dates: 7/1/94 to 6/30/95

Federal Program Year 1995-1996

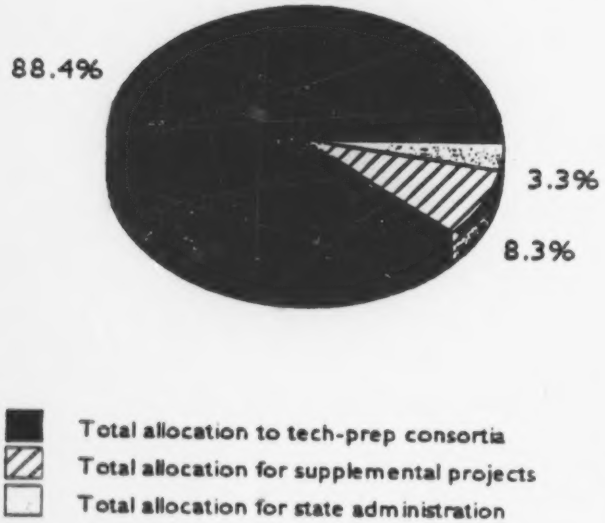
☆ 25 consortia received continued funding with an average award of $300,718 that included prior years' carryover funds. Total award $7,517,958. Effective dates: 7/1/95 to 6/30/96

FIGURE 4 - Summary of Tech-Prep Federal Funding in Texas
Federal Fiscal Years 1992-1996
from the *Carl D. Perkins Vocational and Applied Technology Education Act of 1990*
(Title III, Part E - Tech-Prep Education)



Total state allocation: federal fiscal years 1992-1996	$36,209,242
Total state expenditures: federal fiscal years 1992-1995	$27,192,179

FIGURE 5 - Per Cent Total State Tech-Prep Allocation by Major Category Federal Fiscal Years 1992-1996

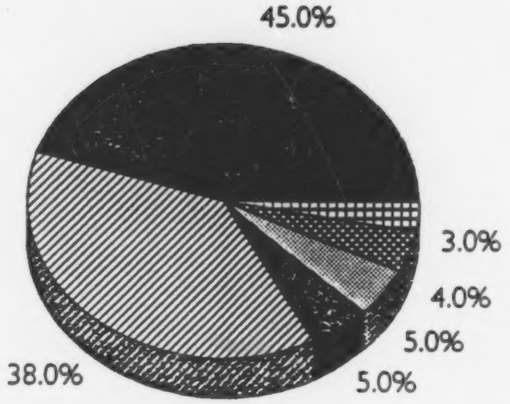


Approximately 8% of all federal tech-prep funds allocated to the state of Texas (federal fiscal years 1992-1996) was allocated for supplemental grant projects to support statewide collaboration and decrease duplication of efforts among consortia. Just over 3% of these funds was allocated for state administration.

During the same period, over 88% of all tech-prep funds went directly to tech-prep consortia. Services and activities provided by tech-prep consortia include:

- ☆ serving as liaison among all partners, and providing technical assistance;
- ☆ coordinating program and curriculum development;
- ☆ coordinating and delivering professional development activities for all sectors;
- ☆ developing, printing, and distributing marketing and recruitment materials;
- ☆ providing career awareness, guidance, and counseling services and materials;
- ☆ providing funds for equipment, materials, and supplies for new and existing programs;
- ☆ monitoring and evaluating programs and student achievement; and
- ☆ providing assistance in the integration of academic and technical learning.

FIGURE 6 - Average Consortium Federal Tech-Prep Expenditures by Major Category



An average of 45% of all consortium expenditures was for direct allocations to, and services for, consortium member institutions.

(Based on the average of the 94-95 FFY expenditures, 13 of 25 consortia reporting. Average 94-95 total expenditure - $333,322 per consortium)

Direct allocations and services include:

- ✩ subgrants to independent school districts and colleges for equipment, materials, and supplies;
- ✩ curriculum development;
- ✩ professional development;
- ✩ consortium member travel;
- ✩ career guidance/counseling; and
- ✩ student support services.

Other allocations include:

- ✩ 38% field and support staff salaries and benefits;
- ✩ 5% consortium office operating expenses;
- ✩ 5% fiscal agent's indirect costs;
- ✩ 4% printing and marketing; and
- ✩ 3% staff travel.

Tech-Prep: Effective Use of Federal Tech-Prep Funds

In addition to the cost savings offered to Texas' college students through course articulations in tech-prep programs and less need for academic remediation, tech-prep has offered comprehensive services to regional institutions and organizations at a very low rate.

This cost effectiveness can be illustrated by the average federal tech-prep expenditure per public school student per year, and per independent school district per year.

For example:

✩ Tech-prep funds expended in all 25 consortia totaled $24,447,809 for federal fiscal years 1992-1995, averaging $244,478 per consortium per year for four years. *(Note: 7 consortia expended funds for only three years)*

✩ The average tech-prep federal expenditure for delivering tech-prep opportunities and services was $6,387 per independent school district per year for four years (calculation based on 957 independent school districts with high schools.)

Range: *from $ 2,979 per district per year in rural East Texas*
(72 districts and > 125,000 students)

to $22,195 per district per year in South Texas
(only 8 districts and < 59,000 students)

✩ The average tech-prep federal expenditure for delivering tech-prep opportunities and services was $1.70 per student per year for four years (calculation based on a K-12 enrollment of 3,585,112 students, 1993-1994 school year, in these same school districts.)

Range: *from $ 0.60 per student per year in urban Gulf Coast*
(> 830,000 students in 75 districts)

to $8.23 per student per year in highly rural Concho Valley
(<30,000 students in 20 districts)

Tech-Prep Educational Programs

Tech-prep programs consist of a six-to-eight year plan of study, much like a college major, that begins in the ninth grade. Comprehensive career guidance and counseling assists students in the selection of the major. After introductory classes, a four-year technical core begins in the eleventh grade and concludes after two years of postsecondary education at a community or technical college, private proprietary school, or postsecondary apprenticeship. Many programs have options for baccalaureate-level and advanced study.

College-preparatory academic courses are taken in grades 9-12 that directly support the high school technical curriculum and which prepare the student for success in postsecondary education. Higher-level academic courses follow at the postsecondary level. The programs emphasize competency-based curricula, with integrated academic, technical, and workplace skills.

College and/or apprenticeship credit may be earned by the student while in high school, most commonly through the process of course and/or program articulation. Students may also earn course credit by concurrent enrollment or credit-by-exam.

Based on information provided by state and regional labor market analysts, tech-prep programs are developed to provide employees for targeted occupations and industries in areas where high-skill, high-wage employment is available in the region, balanced by the ability of individual school districts and colleges to equip and operate a specific program.

- ☆ 378 distinct tech-prep programs have been developed in 17 major occupational program areas statewide.
- ☆ These programs offer a total of:
  - 551 associate of applied science degree awards;
  - 3 associate of occupational studies degree awards;
  - 1 registered apprenticeship;
  - 544 certificate exit point awards; and
  - 449 enhanced skills certificate awards.
- ☆ State-approved tech-prep programs are located in 224 of the 252 Texas counties (88.9%) with independent school districts.

FIGURE 7 - Tech-Prep Program Model

Grades 9-12
- career guidance and counseling
- selection of career major
- recommended high school program
- academic and technical integration
- articulated courses
- student competence evaluation
- workplace skill development
- external work experiences

Entry-level

Alternate entry for:
- non-tech-prep high school graduates
- GED recipients and high school drop-outs
- returning adults and displaced workers

- leveling courses
- basic academic and workplace skills
- exams for course credit
- credit for work experience

Preparatory

Community and technical colleges
- associate degrees
- articulated courses
- enhanced skills certificates
- apprenticeships
- workplace skill development
- external work experiences

Technical-level

Proprietary institutions
- basic academic skills
- associate degrees
- workplace skill development

Technical-level

Four-year colleges and universities

- baccalaureate degrees
- advanced and professional degrees

Professional-level

BUSINESS AND INDUSTRY

Apprenticeships
Registered and non-union

EMPLOYMENT

TABLE 2 - Summary of Tech-Prep Programs by Occupational Area

CIP* Codes	Program Description	Number of Postsecondary Programs	Percent of Total Programs
52	Business Management & Administrative Svs.	106	28.0
51	Health Professions and Related Sciences	[illegible]	[illegible]
15	Engineering-related Technologies	50	13.2
48	Precision Production Trades	[illegible]	[illegible]
43	Protective Services	31	8.2
47	Mechanics & Repairers	25	6.6
11	Computer & Information Sciences	25	6.6
20	Vocational Home Economics	[illegible]	[illegible]
01	Agricultural Business & Production	9	2.4
08	Marketing Operations/Distribution	[illegible]	1.6
41	Science Technologies	4	1.1
46	Construction Trades	3	0.8
10	Communications Technologies	2	0.5
02	Agricultural Sciences	2	0.5
09	Communications	1	0.3
49	Transportation & Materials Workers	1	[illegible]
50	Visual & Performing Arts	1	0.3
[illegible]	[illegible]	[illegible]	[illegible]

* *CIP Code - Classification of Instructional Programs, 1990 edition, U.S. Department of Education*

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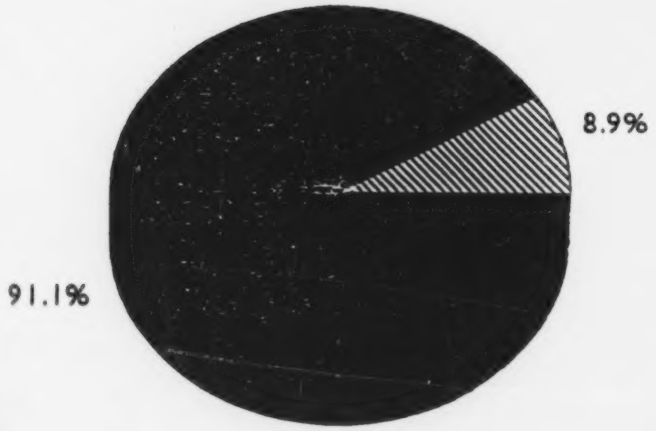
FIGURE 8 - Level of Participation - Public Two-year Postsecondary Institutions



Over 91% of all public two-year postsecondary institutions offer state-approved tech-prep programs.

These institutions include:

- ☆ 45 of the 50 community colleges and community college districts;
- ☆ all 3 campuses of the Texas State Technical College; and
- ☆ all 3 public, lower-division postsecondary institutions.

TABLE 3 - Postsecondary Tech-Prep Student Enrollments

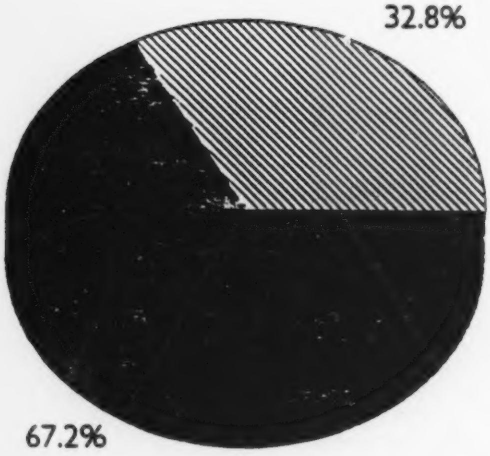
Certified:	
Fall 1993	8,529
Fall 1994	25,089
Preliminary:	
Fall 1995	45,858

Includes alternate-entry students, as well as tech-prep high school graduates.

Each of the 51 postsecondary institutions that offers state-approved tech-prep programs offers multiple program options.

Approvals of tech-prep programs at a state university, a proprietary institution, and with a registered, postsecondary apprenticeship signal expansion of tech-prep program articulation in Texas beyond public community and technical colleges.

FIGURE 9 - Level of Participation - Public Independent School Districts



643 of Texas' 957 independent school districts with high schools (67%) offer at least one tech-prep program.

There are over 2,900 tech-prep postsecondary program options available statewide for Texas' high school students.

- ☆ Of the 643 school districts with state-approved tech-prep programs, 517 (over 80%) offer multiple articulation options for their students.
- ☆ 202 of these districts (over 31%) offer tech-prep program articulation options with multiple colleges, often in more than one planning region.

TABLE 4 - Secondary Tech-Prep Student Enrollments (PEIMS)

1993-1994	11,398
1994-1995 (42.7% of tech-prep school districts reporting)	25,956
1995-1996 (preliminary)	56,821

TABLE 5 - Independent School Districts with State-Approved Tech-Prep Programs by Community Type (as of March, 1996)
1993-1994 ISD classifications

Community Type	ISD's with High Schools	% with Tech-Prep
Major urban	9	100.0
Major suburban	65	95.4
Other central city	25	100.0
Other central city/suburban	80	81.3
Independent town	74	85.1
Non-metro: fast-growing	91	57.9
Non-metro: stable	236	73.3
Rural	377	51.5

TABLE 6 - Independent School Districts with State-Approved Tech-Prep Programs by Total Enrollment (as of March, 1996)
1993-1994 school year enrollments

Enrollment	ISD's with High Schools	% with Tech-Prep
> 50,000	7	100.0
25,000 - 49,999	22	95.2
10,000 - 24,999	48	97.9
5,000 - 9,999	62	88.9
3,000 - 4,999	77	91.0
1,600 - 2,999	136	75.4
1,000 - 1,599	118	63.9
500 - 999	195	61.9
< 500	292	49.7

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Tech-Prep consortial partnerships have provided access to tech-prep programs to even the smallest, most remote schools in Texas.

Of the 260 independent school districts with high schools classified as rural with total district enrollments of <500:

☆ 125 (48%) offer tech-prep programs for their students in 11 different program areas; and

☆ 90 (almost 35%) offer multiple articulation options.

TABLE 7 - Program Offerings in Texas' Rural Independent School Districts with Total Enrollments < 500

CIP Code	Program Description	# of Articulation Options	Percent
52	Business Management & Administration Services	96	36.0
11	Computer & Information Sciences	62	23.2
20	Vocational Home Economics	31	11.6
15	Engineering-related Technologies	20	7.5
51	Health Professions & Related Sciences	18	6.7
01	Agricultural Business & Production	13	4.9
46	Construction Trades	12	4.5
02	Agricultural Sciences	7	2.6
43	Protective Services	4	1.5
41	Science Technologies	3	1.1
08	Marketing Operations Marketing & Distribution	1	0.4

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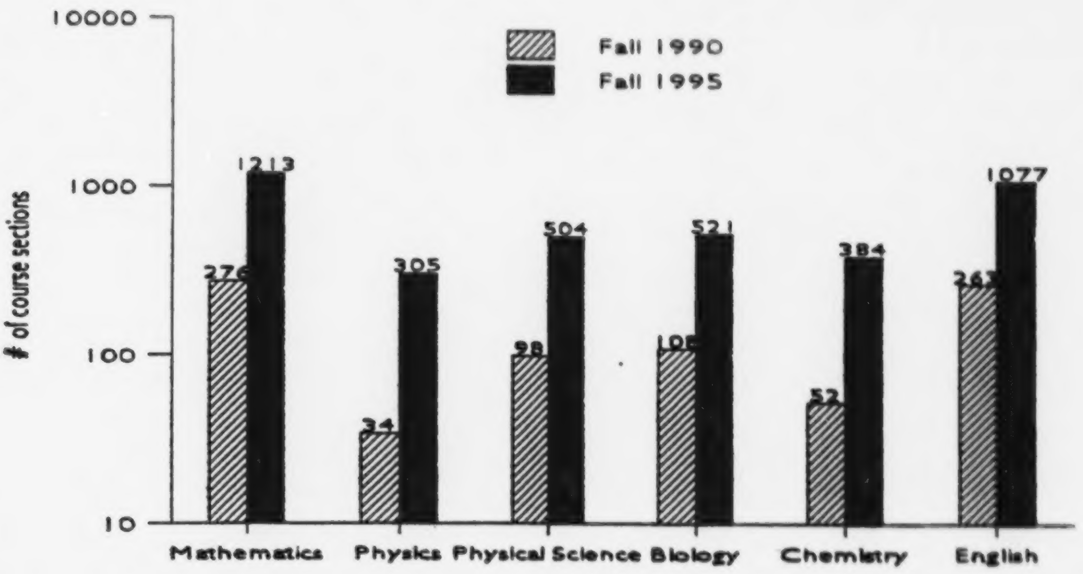
Impact of Consortium-Sponsored Activities

The impact of the numerous tech-prep consortium-sponsored professional development, curriculum development, and content integration activities is widespread.

Preliminary indication of the influence of these tech-prep processes on classroom instruction is demonstrated by surveys of independent school districts in eight representative tech-prep consortia.

The results indicate a substantial increase in the number of academic courses taught using methods that emphasize applications of traditional academic content.

FIGURE 10 - Increase in Number of Secondary Academic Course Sections Taught Using Real-World Applications
(1990-1995, representative sample aggregate)



Supplemental Tech-Prep Projects

Supplemental tech-prep projects, designed to decrease duplication of efforts among individual tech-prep consortia, conduct a variety of activities related to curriculum development, professional development, and evaluation that serve all tech-prep consortia.

The products, services, and training provided by these tech-prep projects have benefitted technical education statewide.

☆	Number of projects funded with tech-prep federal funds (federal fiscal years 1992-1996)	28
☆	Total allocated for tech-prep supplemental projects (federal fiscal years 1992-1996)	$3,843,988
☆	Total expended for tech-prep supplemental projects (federal fiscal years 1992-1995)	$2,306,645

FIGURE 11 - Federal Tech-Prep Funding for Supplemental Projects by Major Category

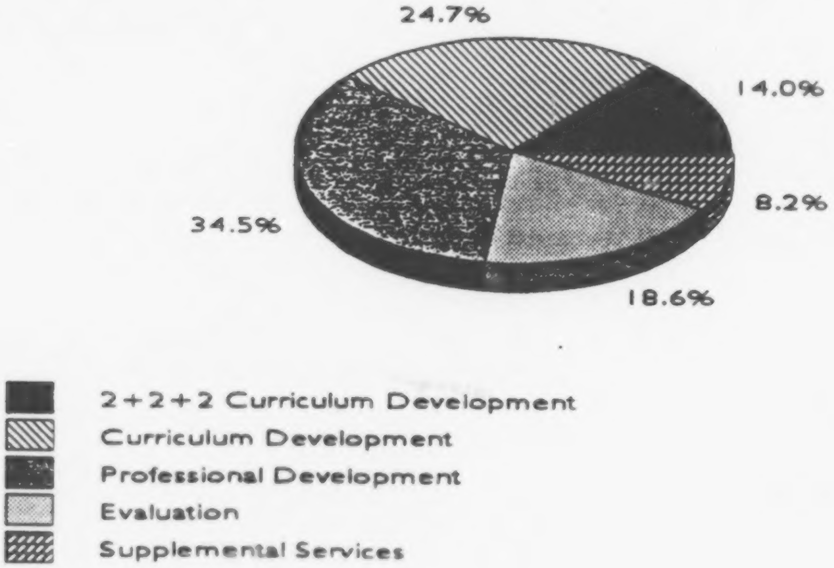


TABLE 8 - Tech-Prep Supplemental Projects Funded with Tech-Prep Federal Funds Federal Fiscal Years 1992-1996

Project Title	Fiscal Agent	[illegible]	Total Amount Funded (1992-1996)	Total Amount Expended (1992-1995)
2+2+2 Curriculum Development				
Telecommunications	Austin Community College	1992	$ [illegible]	$ [illegible]
Building Construction	Texas State Technical College-Harlingen	1992-93	$120,000	$114,694
Agriculture Technology	[illegible] Com. College	1992	$ [illegible]	$ [illegible]
Law Enforcement	Bee County College	1992-93	$120,000	$101,078
Child and Family Development	[illegible] College	1992-93	$ [illegible]	$ [illegible]
Curriculum Development				
Computer Science	Houston Community College	[illegible]	$ [illegible]	$ [illegible]
Advanced Skills Course Manual	TSTC - Marshall	1993	$ 72,267	$ 69,496
Skill Dynamics	[illegible]	[illegible]	$ [illegible]	$ [illegible]
Computer, Office, Automotive	El Paso Community College	1993	$ 46,680	$ 45,843
Intergenerational Studies	Texas Tech University	[illegible]	$ [illegible]	$ [illegible]
Tech-Prep Bridge Courses	TSTC - Marshall	1994	$ 73,300	$ 70,849
School-to-Work Apprenticeship	[illegible] College	[illegible]	$ [illegible]	$ [illegible]
Advanced Skills Courses	TSTC -Sweetwater	1994	$ 56,188	$ 48,117
Applied [illegible]	TSTC - Marshall	[illegible]	$ [illegible]	$ [illegible]
Hospitality	Texas Tech University	1996	$ 40,000	n/a
Applied English	McLennan Community College	1996	$ [illegible]	[illegible]

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Project Title	Fiscal Agent	Years Funded	Total Amount Funded (1992-1996)	Total Amount Expended (1992-1995)
Professional Development				
Total Quality Management	Temple Junior College	1993-96	$370,120	$214,865
Statewide Consortium	Texas A&M University	1993-95	$757,662	$693,003
Improved Career Decision Making	Texas SOICC	1993-96	$32,500*	$ 25,913
Evaluation				
State Evaluation of Tech-Prep	Decision Information Resources	1993-95	$316,619	$247,372
State Evaluation of Tech-Prep	Houston Community College	1996	$ 75,000	n/a
Effective Tech-Prep Policies and Practices	Texas Tech University	1996	$ 95,000	n/a
Special Populations and Tech-Prep	Texas Tech University	1995	$ 41,074	$ 39,775
Supplemental Services				
Tech-Prep/School-to-Work Initiative Management	Region V ESC	1996	$ 95,944	n/a
Tech-Prep Promotional Video/STARLINK	Austin Community College	1996	$ 7,500	n/a
Career Guidance	University of North Texas	1996	$ 94,000	n/a
Work-based Industry Videos	Upper Rio Grande PIC	1996	$ 95,000	n/a
Project SCORE	Collin County Community College	1996	$ 85,000	n/a

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III. DATA SOURCES WITH ANNOTATIONS

Average expenditure per student per year and per school district per year - *based on the total ISD enrollments (K-12) for all districts in the region with high schools (1993-1994 school year), and the total federal fiscal years (FFY) 1992-1995 federal tech-prep consortium expenditures divided by the total number of years for which funds were expended.*

College participation in state-approved tech-prep programs and program areas by CIP codes - *from the Education and Training Clearinghouse tech-prep program inventory, Texas Higher Education Coordinating Board, as of March 3, 1996, and/or verified by college personnel. Grouped according to the Classification of Instructional Programs (CIP), 1990 edition, U.S. Dept. of Education. Data for community college districts with multiple FICE code campuses are combined.*

College preliminary Fall 1995 headcount - *provided by the Texas Higher Education Coordinating Board (headcount as of October, 1995.)*

Consortium staff information - *provided by the tech-prep directors and the Texas Higher Education Coordinating Board.*

County populations - *from the 1993 annual estimate of the Texas Department of Commerce, State Data Center; 1993 represents approximate mid-cycle figures for federal fiscal years 1991-1996.*

Estimated Fall 1995 secondary and postsecondary student enrollments - *in tech-prep programs; from 1995-1996 tech-prep consortium first quarter reports and/or the Fall 1995 Inventory of Local Tech-Prep Planning and Implementation, Mathematica Policy Research, Inc., compiled for the national evaluation of Tech-Prep, U.S. Department of Education. Postsecondary includes students from tech-prep high school programs as well as students entering the associate degree program by alternate methods, and/or students enrolling in certificate programs only.*

Federal grant awards and expenditures, fiscal agents, and budget details federal fiscal years 1992-1996 - *from the Texas Higher Education Coordinating Board; total awards include prior years' carryover funds and/or additional allocations, if applicable. The federal fiscal year (FFY) is July 1 - June 30.*

Governing board membership and chair - *from the 1995-1996 tech-prep consortium reapplications and/or the Fall 1995 Inventory of Local Tech-Prep Planning and Implementation, Mathematica Policy Research, Inc., compiled for the national evaluation of Tech-Prep, U.S. Department of Education; rounded to 100%.*

Impact of tech-prep program development on high school course content integration - *from responses to a survey of independent school districts with state-approved tech-prep programs in 8 representative tech-prep consortia (Alamo, Brazos Valley, Capital Area, Lower Rio Grande Valley, North, North Central, Upper Rio Grande Valley, and West Central Texas.)*

Increase in articulation agreements and participating high schools - *from responses to a survey of community and technical college technical education administrators, with assistance from the Texas Association of College Technical Educators (TACTE), or the tech-prep consortium directors. Articulation agreements may be program and/or individual course articulations. High school participation is duplicate as high schools may participate in articulation with multiple colleges. Increase represents all colleges reporting. Data for community college districts with multiple FICE code campuses have been combined.*

Independent School District (ISD) enrollments - *from Snapshot '94: 1993 - 1994 School District Profiles, Texas Education Agency, Division of Performance Reporting.*

ISD participation by community type and enrollments - *in state-approved tech-prep programs; from the 1994- 1995 Public Education Information Management System (PEIMS) data, Texas Education Agency, Division of Technology Support.*

ISD participation by county and program areas - *in state-approved tech-prep programs; from the Education and Training Clearinghouse tech-prep program inventory, Texas Higher Education Coordinating Board, as of March 3, 1996, and/or verified by college or consortium personnel.*

Planning region size - *based on the Governor's 24 planning regions and county square mileage as determined by the census bureau, 1990.*

Process for receiving articulated credit - *from responses to a survey of community and technical college technical education administrators with assistance from the Texas Association of College Technical Educators (TACTE). Method cited is in addition to regular college admissions requirements.*

Regional highlights and consortium products - *from 1995-1996 consortium first quarter reports, and interviews with tech-prep consortium directors and staffs.*

Secondary enrollments in approved tech-prep programs - *from the Public Education Information Management System (PEIMS) data, Texas Education Agency, Division of Technology Support.*

A-1.12-a-1

Gulf Coast Tech Prep Consortium

MEMORANDUM

Date: March 20, 1995

To: All Gulf Coast Independent School Districts and Colleges

From: Eileen Booher, Director

Subject: 1995-96 TECH PREP FUNDING

As you may already know, the U.S. House of Representatives has restored the proposed spending cut to Tech Prep. It appears now that funding will continue through the 1995-96 funding year. As the funding beyond this point is not assured and will probably be in the nature of block grants, it is very important to plan your 1995-96 activities and budget accordingly. Total regional funding is expected to remain at the 1994-95 levels.

Please fill out the attached Request to Participate Forms if you are interested in participating in Tech Prep funding for the fiscal year July 1, 1995 - June 30, 1996. Please send one signed original and one copy of this form to the consortium office. Include a letter of support for your budget request from the highest ranking official in your institution (Superintendent, Chancellor, President, etc.)

The amount of funds allocated to each school district or college will be based on demonstrated progress as well as documented needs. The information on these forms includes those factors that will be used by the consortium to determine the amounts each individual Independent School District and/or College will receive. Although regional funding is expected to remain level, the amount each district or college received in prior years will not be a factor in determining 1995-96 funding.

Every effort has been made to make this form as simple as possible. The form may be filled out be hand, typed, or you may request a disk in formatted in most available DOS or Windows based software (please specify).

Please request an amount that truly reflects your district/college needs in furthering progress in Tech Prep for the next school year.

These forms and accompanying letter must be received in the Consortium offices by 5:00 p.m., Monday, April 17, 1995, at:

250 North Sam Houston Parkway East
Suite 214
Houston, Texas 77060

If you have any questions or need assistance, please call me at 713-591-353

Gulf Coast Tech Prep Consortium
Request to Participate in Tech Prep Funding
1995-96

Name of District: San Jacinto College District	
Name of Contact Person: Dr. Beryl McKinnerney	
Signature: Beryl McKinnerney	
Telephone: (713) 998-6182	Fax: (713) 479-8127
Mailing Address: 4624 Fairmont Parkway, Suite 209, Pasadena, Texas 77504	

For the 1994-95 school year:

Please indicate the number of high schools/colleges Tech Prep in your district working on Tech Prep graduation plans in the following areas (List specific plan names):

See footnotes for explanation of stages

Cluster List graduation plan name	Planning[1]	Design-ing[2]	Implement-ing[3]	Evaluating[4]	Date Plan Submitted	Date Plan Approved	Estimated Tech Prep Program Enrollment 94-95
Other							
Electrical		2					C,N,S
[illegible]ding	2						C,N
Instrumentation	2	1					C,N
Business:							
Office Admin. (4 options)			6		May 1994	Sept 1994	C,N,S
Engineering							
Drafting		3	1		May 1994	Sept 1994	C,N,S
Health							
LVN/ADN		1	1		May 1994	Sept 1994	S
Respiratory Care	2				May 1995		C
Other							
Child Develop.	1				May 1995		C,N
Crim. Justice	2				May 1995		C,N
EMT	2				May 1995		C,N
Other							
Auto Body	1				May 1995		N,S
Construction	1				May 1995		N
Aeronactical	1				May 1995		C
Computer Info sys.		3			May 1995		C,N,S
[illegible]ctronics		2	1		May 1994	Sept 1994	C,N,S

or the 1994-95 school year:

lease place a check mark in the box that best demonstrates your district/college progress in the integration of academic/vocational curriculum in the following subject areas:

Subject	Planning[1]	Designing[2]	Implementing[3]	Evaluating 2[4]
English	X	X		
Mathematics	X	X		
Sciences	X			
Social Studies	X			
Career and Technical		X (70%)	X (30%)	
Other				

For the 1994-95 school year:

Please fill in the following information concerning other Tech Prep services being provided in your district/college:

Other Services	Number of Schools/ campuses	Grade levels where used	Materials Used (If applicable)	Planning for 94-95
Student Assessment	3 campuses	13,14	PTT TASP	Yes
Career Awareness	3 campuses	13,14	Seminars, Recruitment Career Assessment	Yes
Career Orientation	3 campuses	13,14	Discover-Career and Ed. Planning Student Planning Sheets	Yes
Career Guidance and Counseling	3 campuses	13,14	Catalogs, Brochures, etc. Videos Center Services	Yes
Student Competency Profiles	3 campuses	13,14	Developed by faculty	Yes
Marketing tools	3 campuses	13,14	Brochures, Flyers on Programs & 6 Year Plans	Yes
Other	3 campuses	13,14	Counselor, Principals workshop Seminars	Yes

st of cooperating partners for 1994-1995:

List ISDs, colleges, governmental agencies, businesses and industries that are working as partners in this Tech Prep project.

Educational Institutions:

Friendswood ISD, Pearland ISD, Deer Park ISD, Pasadena ISD, LaPorte ISD,
Galena Park ISD, Sheldon ISD, Channelview ISD, Dayton ISD, Huffman ISD,
Goose Creek ISD, Clear Creek ISD

Government Agencies, Businesses, and Industries

List professional development and training activities held locally and/or regional/out-of-state workshops attended by faculty and staff. Please include activities planned through June 31, 1995.

Workshop Subject	Date	Number Attending
Tech Prep State Conf.	Mar. 29-31, 1996	6

Please use additional sheet if necessary.

Please mark the method(s) used to recruit students for the Tech Prep program in your district/college:

Methods:	**94-95 School year**	**Planning for 95-96**
Marketing materials such as brochures and videos	X	X
Career Awareness in K-8 grades		
Career Orientation in Middle school	X	X
Career Fairs		
Student -Parent Meetings	X	X
Individual Counseling	X	X
Community College recruitment	X	X
Other - Please list:	Start Treck	Start Treck

Please identify the method(s) used to select students for the Tech Prep program in your district/college.

Methods:	**94-95 School year**	**Planning for 95-96**
All students considered Tech Prep students		
Random selection for pilot program		
Career Inventory at middle school		
Counseling	X	X
Computerized career lab		
Other - please specify:		

Student competency profiles(tracking) is done using the following methods:

[illegible]ethods:	94-95 School year	Planning for 95-96
[illegible]EA approved competency profiles/folders		
Developing Career/Competency portfolios including:		
career assessment results		
student work experiences/internships		
community service, awards		
extracurricular activities		
career plans		
writing samples		
documented mastery of competencies	X	X
Other:		

List linkages that are present between your local JTPA/ PIC and your district/college:

Affiliation /Services Utilized	Houston Works	Harris County PIC	Houston-Galveston PIC
PIC Membership		X	
[illegible]mmer Youth Employment [illegible]ogram		X	X
Tutoring		X	X
Family Literacy		X	X
Support/Referral		X	X
ESL			
Other - Please list:			

Please comment on any problems with JTPA service delivery:

ease check the method(s) used in your district/college to provide student preparatory and support rvices, effective drop-out prevention, re-entry, meet the needs of minority youth, LEP youth, and educationally and economically disadvantaged students in Tech Prep programs:

Student Preparatory and support Services	**1994-95** ✓	**Planning for 1995-96**
Child care services	✓	✓
Vocational adjustment coordinators for career assistance for special education and at-risk students	✓	✓
Counselors, teachers, and assistant principals work to identify and provide guidance, referral, and provide services	✓	✓
Financial aid assistance	✓	✓
Single parent programs	✓	✓
On campus health care		
Mentoring program		
Other - please list:		

Drop out prevention and re-entry procedures	**1994-95** ✓	**Planning for 1995-96**
Teacher intervention	✓	✓
Personal counseling	✓	✓
mmunities in schools		
ernative award of credit		
Summer school	✓	✓
Other - please list:		

Special populations needs are met by:	**1994-95** ✓	**Planning for 1995-96**
Equal access to all programs	✓	✓
Integration of academic and vocational education	✓	✓
Inclusion in programs with individual assistance available though special education		
English as a Second Language Services	✓	✓
Use of vocational adjustment counselors to assist students in		
Computer-assisted instruction	✓	✓
Modification of equipment and materials if needed	✓	✓
Providing access to services of the Texas Rehabilitation Commission	✓	✓
Other - please list:		

ease list the external work experiences and work place training for the Tech Prep students in your district/college:

Methods:	Program *example:health occupations*	Number of students 94-95 School year	Planning for 95-96✓
Internships	Technical/Industrial/Business	70	100
Shadowing			
Mentoring			
Clinical rotation	Health Occ.	200	200
Apprenticeship			
Coop Programs	Automotive	45	45
Preceptorships			
Other - Please list:			

Please describe your most successful work-based program:

GM-ASEP; Ford Asset Automotive Programs

Briefly describe the effect of Tech Prep on student achievement in terms of changes in test scores, attitude, attendance patterns, dropout rates, etc. for your district/college. (Success stories)

Increase student success through better preparation in academics

Please estimate the amount your district/college spent on Tech Prep related activities in 1994-95.

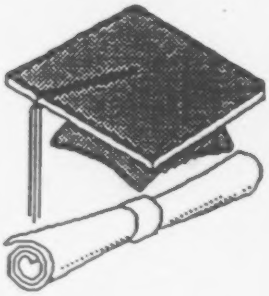
$55,000

Please briefly state the amounts your district/college would like to receive and the purpose for which e funds would be used:

Please note: Equipment purchases and salaries will not be funded. Please limit travel to 3% of the total amount requested. Only local mileage will be funded.

Categories	Amounts	Purpose: Examples include professional development, curriculum development, release time for development of graduation plans and articulation, and educational materials. **Please be specific and list by specific program.**
Educational Materials $400 stipend for 30 faculty	$ 12,000	Development of 6 yr. plans and integration of scans competencies in each of the following programs: LVN/ADN, Construction, Auto Body, Electrical, Electronics, Drafting, Computer Science, Child Development, Accounting, Respiratory, Office Administration, Management Development, Auto Mechanics, Law Enforcement, Process Tech., Aerospace Tech., Aviation, Instrumentation Tech.
Printing	$ 3,000	Print 6 yr. plans and models for integration of scans into Academic/Technical courses
Consultants	$ 1,500	Workshop on integration of scans into Academic/Technical courses
Substitute Pay		
Local mileage		
Other Travel to State TechPrep	$ 3,000	
Total	$ 19,500	

WORLD CLASS GRADUATES THROUGH TECH PREP



What is Tech Prep? Tech Prep is a national workforce development system.

Tech Prep has two goals:

- Link students to marketable jobs
- Give students the appropriate academic credentials for higher education

Did you know?

- That you can earn college credits (credits in escrow) while earning a high school diploma
- That you can learn problem solving and critical thinking skills while in high school
- That you will be preparing for college while in Tech Prep
- That you can be a Matador Scholar and enrolled in Tech Prep
- That you will be learning "real world" applications while in Tech Prep
- That you will have "hands-on experiences" while in Tech Prep
- That by the year 2000 that 80% of all jobs will require more than a high school diploma, but less than a four year degree
- Business and Industry endorse and support the Tech Prep System

TECH PREP is a way to keep students moving and motivated, because they can see where their education is leading them.

Seguin High School is one of the leading schools in the State of Texas in Tech Prep. SHS students can earn college credit (credits in escrow) in the following fields of study:

- **Advanced Electronics Professions**
- **Business/Office Professions**
- **Early Childhood Professions**
- **Law Enforcement/Criminal Justice Professions**
- **Marketing Professions**
- **Health Services Professions (pending)**

TECH PREP TEXAS

1. Tech Prep Texas gives access to skills, education, and careers young people would have missed in the past.

Workplace reality has changed, and now a wide variety of satisfying technical careers are available almost for the asking to those who are qualified. Tech Prep combines high school with a two-year postsecondary technical certificate or degree program, or with an Apprenticeship. In partnership with employers and labor organizations, college and secondary educators have joined to open doors of opportunities to Tech Prep students.

2. Tech Prep Texas gives a clear focusto studies, offering both directions and hope for the future.

Tech Prep programs lay out a graduation plan which combines high school and college, academics, and technical study. Because Tech Prep programs involve serious input from local employers, students can be confident of good job prospects at the end of their Tech Prep studies. Tech Prep's work-based learning component helps young people make the difficult transition from school to the workplace. It shows students where they can go, what they have to do to get there, and what their alternatives are along the way. It opens many doors--while closing none.

3. Tech Prep Texas provides a solid academic foundation.

Employers want to hire people with strong academic backgrounds. Through the study of contextual science (physics, chemistry, biology), mathematics, and communications, and a technical speciality area Tech Prep education plans provide that workplace background. Using newly developed teaching techniques that suit the learning styles of hands-on, down-to-earth learners, Tech Prep academics stress applied learning rather than strictly theoretical approaches, using student interests to build skills and success.

4. Tech Prep Texas students learn highly valuable, sophisticated technical skills.

The day of high pay for low skills is past. But the good news is that high skills will continue to pay off. Technical positions at all levels--and in ALL sectors of the economy --are growth jobs of the future. Almost all these jobs will require education beyond high school--and many of these emerging jobs are little-known to the public. But you can be sure that employers know about them. Tech Prep education programs make these career opportunities accessible, blazing pathways to success for Tech Prep graduates. In addition to giving students access to free college courses, Tech Prep makes it possible for students to exit high school better ready to work their way through college or an Apprenticeship.

5. Tech Prep Texas connects learning and life.

Tech Prep offers an education based on the unique learning needs and interests of students who like to apply what they know. Tech Prep programs can satisfy a variety of learning styles and needs. In every case, it's learning with a purpose the student understands--it's learning by doing, or "education that works."

6. Tech Prep Texas is a path to college.

Tech Prep students can earn college credit for studies they complete in high school. Completing a Tech Prep program generally means earning a two-year associate degree. Tech Prep is both an alternative to--and a path to--the traditional four-year college degree. After completing their post-secondary Tech Prep program, graduates will have valuable technical and study skills, something both colleges and employers are looking for.

7. Tech Prep Texas offers protection against career obsolescence.

Tech Prep graduates have mastered difficult skills. They have developed an ability to learn and apply new technical knowledge. That ability to learn attracts employers to Tech Prep graduates. With our world changing at an accelerating rate, it's safe a safe bet most of us will confront several new generations of technology over the course of our work lives. Mastering the ability to learn is the best protection against career obsolescence.

A Way to the Future for Your Teenager

Seven Facts Every Parent Should Know About Tech Prep

CHAPTER 8: ARTICULATION PROCESS AND FLOW CHART

Articulation Initiation

Step 1: Suggestions or ideas for articulation may be initiated from any of several sources: independent school district faculty and/or administrators, NHMCCD faculty and/or administrators, NHMCCD Campus Tech Prep Contacts, students, business people, etc.

Step 2: This initial information about possible articulation should be forwarded to any of the Associate Deans (Curriculum Facilitators) at any North Harris Montgomery Community College campus.

Step 3: The Associate Dean will pass the information to the District Curriculum Services Office. The Curriculum Services Office representative (usually the Articulation/Tech Prep Specialist) willo contact a representative from the interested independent school district to confirm the interest and obtain more information. Complete will be shared with all appropriate personnel at all campuses of NHMCCD.

Independent School District Administrative Representative Orientation Meeting

Step 4: Annual meetings will be conducted by NHMCCD Curriculum Services Office (usually early in the fall and spring semesters) to overview existing articulation and discuss plans to initiate and/or review articulation during the new school year. Representatives from all independent school districts and all campuses of NHMCCD will be invited to this meeting. At this meeting, the ISD representatives will identify a primary contact for their district as well as specifying the areas in which they would like to articulate. It is anticipated that most ideas for articulation will be generated at this meeting.

Faculty Identified

Step 5: After the administrative orientation meeting, the ISD primary contact will appoint an instructor (or instructors) from the appropriate discipline to coordinate with the NHMCCD Curriculum Committee from the discipline to perform a detailed comparison of course competencies and student outcomes (performance levels). This information will be provided to the Articulation/Tech Prep Specialist at the beginning of each semester on the High School Articulation Reviewer Information Sheet.

Faculty Orientation Meeting

Step 6: The Articulation/Tech Prep Specialist from NHMCCD Curriculum Services Office will hold an orientation meeting for the involved faculty and will assist in all aspects of this process. All articulation activities will be included in the NHMCCD curriculum process.

Share Competency Documentation

At this orientation meeting, the Articulation/Tech Prep Specialist will overview the articulation process and duties of the articulation reviewers. The NHMCCD discipline Curriculum Committee faculty members will provide the ISD faculty with a detailed competency task list with performance outcomes which describes the exact content of those courses which have potential for articulation. Documentation utilized such as a detailed course syllabus may be utilized. It is also desirable to collect other materials which explain course content such as lab or classroom assignments, textbooks, tests, grading scales, etc.

This first meeting should concentrate on getting acquainted with the content of both programs.

Meeting Activities

Suggested activities include:

- a. Exchange detail course content documentation.
- b. Discuss course content.
- c. Resolve questions about content and achievement levels.
- d. Explore areas where modifications might be made in secondary curriculum.
- e. Arrange to visit typical lab or classroom in both systems as needed.
- f. Compare course competencies by filling in the Articulation Course Competency Analysis Chart.

It is recommended that the teams of instructors from both levels communicate via phone, fax, etc. in addition to meeting in person if needed.

Faculty Compare Competencies and Outcomes

Step 7: The instructors from both levels will work closely sharing course outlines/syllabus, essential elements, textbooks, sample class activities, tests/performance measures, etc. This review process may take several months.

The reviewers will fill out the Articulation Competency Comparison Chart listing competencies and performance levels/student outcomes. Information from this form will be posted to the "Working Articulation Database" in NetScape to provide information to all faculty. Input will be obtained from all concerned through the use of this database/log.

Articulation Recommendation

Step 8: Upon completion of the review by the instructors, a recommendation to the discipline will be made to articulate if the competencies and performance levels match. If they do not, the ISD may choose to revise its curriculum to include those missing elements. If this revision is completed, the course(s) will then be recommended for articulation. Upon consensus from the disciplines and the campus Tech Prep contact, the recommendation will be forwarded to the Curriculum Committees.

Originating VPEPR Signs

Step 9: The final recommendation from the Curriculum Committee will be forwarded to the Vice President for Educational Programs and Resources at each campus.

The signature of the VPEPRS at the originating campus will be needed on the Articulation Competency Comparison Chart. The recommendation for articulation will be shared with appropriate personnel at both levels. IT IS IMPERATIVE THAT ALL CONCERNED INDIVIDUALS BE INVOLVED IN THIS INFORMATION SHARING/RECOMMENDING PHASE.

Agreement Prepared

Step 10: When all concerned agree to the recommended articulation, the VPEPRS will forward the signed Articulation Competency Comparison Chart to the Curriculum Services Office where the Articulation/Tech Prep Specialist will prepare the articulation agreement for signature.

Agreement Sent for Signatures

Step 11: The articulation agreement will be sent from the North Harris Montgomery Community College District Curriculum Office to the ISD representative for signatures. The ISD representative will return the document to the Articulation/Tech Prep Specialist in the North Harris Montgomery Community College District Curriculum Office.

NHMCCD Signs

__Step 12:__ The Articulation/Tech Prep Specialist will forward the document to the appropriate NHMCCD discipline Curriculum Committee facilitator, the Vice President for Educational Programs and Resources, the District Director of Curriculum Services, and the Vice Chancellor for Educational and Student Development for signature.

Updating Database and Distribution

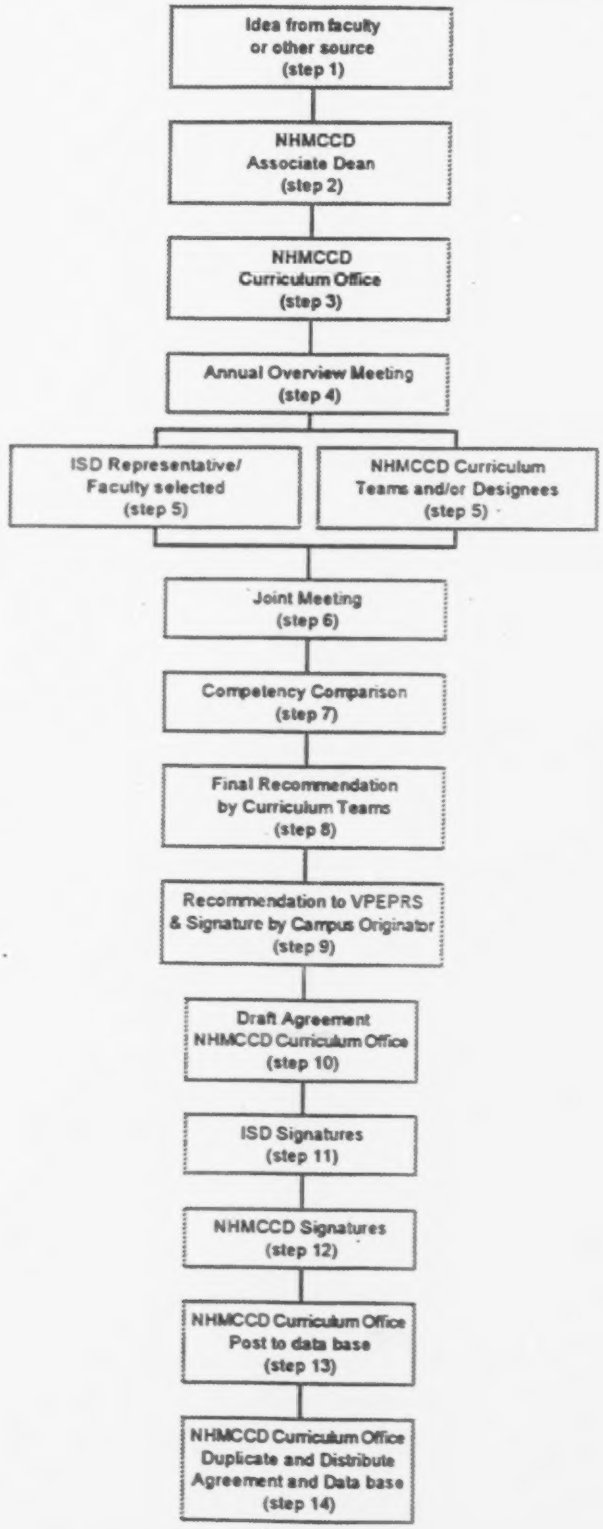
__Step 13:__ The fully-signed articulation agreement will be returned to the Articulation/Tech Prep Specialist who will post the articulation to the articulation data base. Supporting documentation (such as the Articulation Course Competency Comparison Chart, competency checklists, etc.) will be attached to the original agreement which will be filed in the Curriculum Services Offices.

Distribution of New Articulation

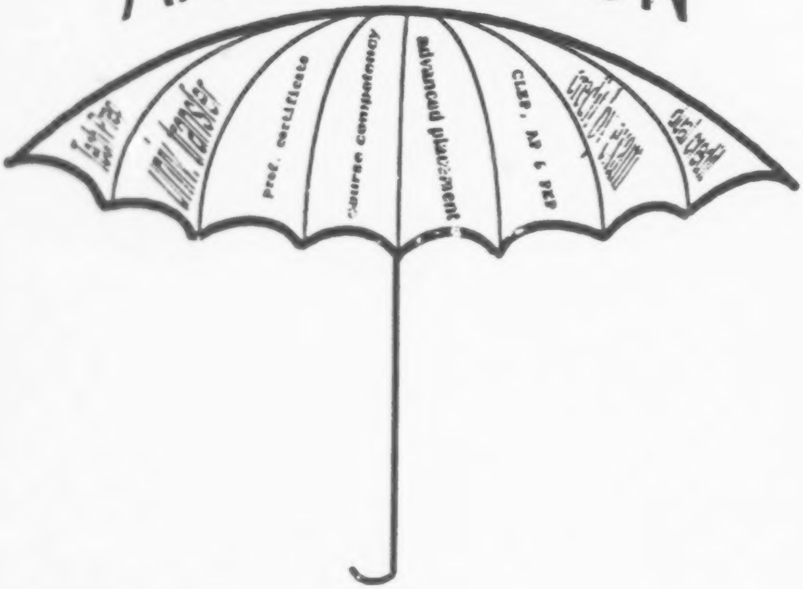
__Step 14:__ Copies of the agreement and updated data base will be distributed to the ISD representatives and to all NHMCCD campus Tech Prep contacts, Associate Deans, curriculum facilitators, and Vice presidents.

Agreement Review

All articulation agreements will be reviewed at least once every two years. The review process will follow the same steps as the initial articulation process, but should be less intensive and quicker to complete.


Idea from faculty or other source (step 1)
NHMCCD Associate Dean (step 2)
NHMCCD Curriculum Office (step 3)
Annual Overview Meeting (step 4)
ISD Representative/ Faculty selected (step 5)
NHMCCD Curriculum Teams and/or Designees (step 5)
Joint Meeting (step 6)
Competency Comparison (step 7)
Final Recommendation by Curriculum Teams (step 8)
Recommendation to VPEPRS & Signature by Campus Originator (step 9)
Draft Agreement NHMCCD Curriculum Office (step 10)
ISD Signatures (step 11)
NHMCCD Signatures (step 12)
NHMCCD Curriculum Office Post to data base (step 13)
NHMCCD Curriculum Office Duplicate and Distribute Agreement and Data base (step 14)

ARTICULATION


tech prep
univ. transfer
prof. certificate
course competency
advanced placement
CLEP, AP & PEP
credit by exam
dual credit

North Harris Montgomery Community College District (NHMCCD) focuses its articulation efforts on competency-based course articulation, Tech Prep articulation, and dual-credit articulation.

Program Nursing

Date May 1992

TECH PREP ARTICULATION AGREEMENT

Upper Rio Grande Tech Prep Consortium
El Paso Community College

The purpose of this instrument is to document the approval of an Articulation Agreement for specific courses and/or programs in the Upper Rio Grande Tech Prep Consortium between El Paso Community College District (EPCC), P. O. Box 20500, El Paso, TX 79998 and Ysleta Independent School District, hereinafter referred to as "LEA" (Local Education Agency). The approval for articulation credit to be awarded based on this Articulation Agreement has been provided for in the Institutional Articulation Agreement previously signed by officials from EPCC and the above mentioned LEA.

This document provides a mechanism to enable students who have completed specified courses and/or programs at the above mentioned LEA under the specific conditions of articulation to be granted college credit by articulation. The course(s) articulated via this document are:

LEA COURSE NAME AND NUMBER	CREDITS AWARDED	EPCC COURSE NAME AND NUMBER	CREDIT HOURS AWARDED
Z110, Health Care Sci.	1	MEDI 1101, Basic Life Support	1
and		MEDI 2102, Med. Term	2
Z198, Health Occs. II	3	MEDI 2101, Ethics & Juris.	2
		MEDI 3105, Intro. to Health Occupations	3

The conditions of the Articulation Agreement were formulated through meetings with representatives from both institutions based on an agreement of evaluation criteria, course contents, and exit competencies. Under the articulation agreement, the following conditions of articulation are hereby set forth:

1.01 The student must meet all EPCC admissions requirements and be officially enrolled in EPCC to be eligible for credit via articulation.

1.02 High school students enrolled under the early admission program must graduate from high school before articulation credit can be granted.

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1.03 The student must have an official high school transcript on file with the EPCC Records Office.

1.04 The student must initiate an official degree plan with the appropriate EPCC counselor at the time of enrollment.

1.05 The discipline coordinator or his/her faculty designer will be responsible for evaluating the official high school transcript and recommending articulation credit based on the stated conditions in the applicable Articulation Agreement. This recommendation is approved by the Division Chair and forwarded to the Records Office for implementation.

1.06 The student must have completed the high school courses for which articulation credit is being requested within 28 months of the request for credit. Credit for high school courses taken beyond the 28 month limit may be granted through petition to the appropriate instructional Dean.

1.07 The student must meet all conditions for articulation credit in the specific Articulation Agreement which covers the requested courses.

1.08 All specific Articulation Agreement will be on file with EPCC Records Office, the appropriate Division Chair, designated Dean, and Tech Prep Director.

1.09 The student must have successfully completed specified high school course(s) and received a grade of 80% or better in order for credit to be awarded.

1.10 In addition to the specific conditions outlined above the following special requirements must be met for the awarding of credit: Check here if none xx

____

____

1.11 The EPCC Division Chair responsible for the above mentioned division will initiate a biennial review of this Articulation Agreement with the LEA representatives to evaluate any changes in competencies, content, or standards.

A-7.0-b-3

Tech Prep Articulation Agreement
Page 3

1.12 This agreement may be terminated in whole or in part by either party giving a full thirty (30) days notice in writing to the other party. Such notice shall be sent by certified mail, return receipt requested, to the address of the respective parties listed above. However, such termination shall not take effect with regard to students already enrolled, until such time as those students have completed their respective courses.

Articulating Institutional Representatives:

By the signatures below, the institution acknowledges a commitment to effectively accommodate the conditions of articulation attached:

(Please sign with black ink)

____
Current Date

EL PASO COMMUNITY COLLEGE
DISTRICT:

Tech Prep Director
Upper Rio Grande Tech Prep
Consortium

Paula R Mitchell
Division Chair
El Paso Community College

Dean, El Paso Community College

Vice-President, Academic Affairs
El Paso Community College

ARTICULATING LEA:

Signature and Title

Signature and Title

Signature and Title
(one or more signatures
required)

pf/tpart
4-92

A-7.1-b-1

PALO ALTO COLLEGE

November 17, 1994

Dear High School Business and Office Education Teachers:

The Office Systems Technology (OST) Programs at Palo Alto College, San Antonio College, and St. Philip's College have recently completed Tech Prep Articulation Agreements with six independent school districts (San Antonio, Northside, Edgewood, La Vernia, Navarro, and Floresville). The community college instructors of the OST Programs will conduct informational meetings on "How to Develop a Tech Prep Articulation Agreement" between your high school courses and the three community colleges. At this meeting, you will learn about:

- Specific business/office courses to articulate with college courses
- Applied English IV course articulated with a college course
- Developing a Tech Prep Agreement
- Articulating other high school and college courses.

You are invited to attend one of the meetings listed below. All meetings will be held at Palo Alto College in the Performing Arts Building, Room 951. Please park in Parking Lot B or C. RSVP if planning to attend by calling Pam Hill at 921-5304 or Lydia Trevino at 921-5103.

Sincerely,

Pamela Hill, Ed.D.
Special Projects Coordinator

Meeting Date	Time	Palo Alto College Location	RSVP by
Monday Dec. 5, 1994	3-5 p.m.	Performing Arts Building Room 951	Nov. 30, 1994
Wednesday Jan. 25, 1994	3-5 p.m.	Performing Arts Building Room 951	Jan. 18, 1995
Monday Feb. 13, 1994	3-5 p.m.	Performing Arts Building Room 951	Feb. 6, 1995

PH:lt

c: Dr. Donna Hines, Instructor
Office Systems Technology-PAC

Mary Ann Grams, Chair
Technologies-SAC

Janie Gonzales
OST Program Director-SPC

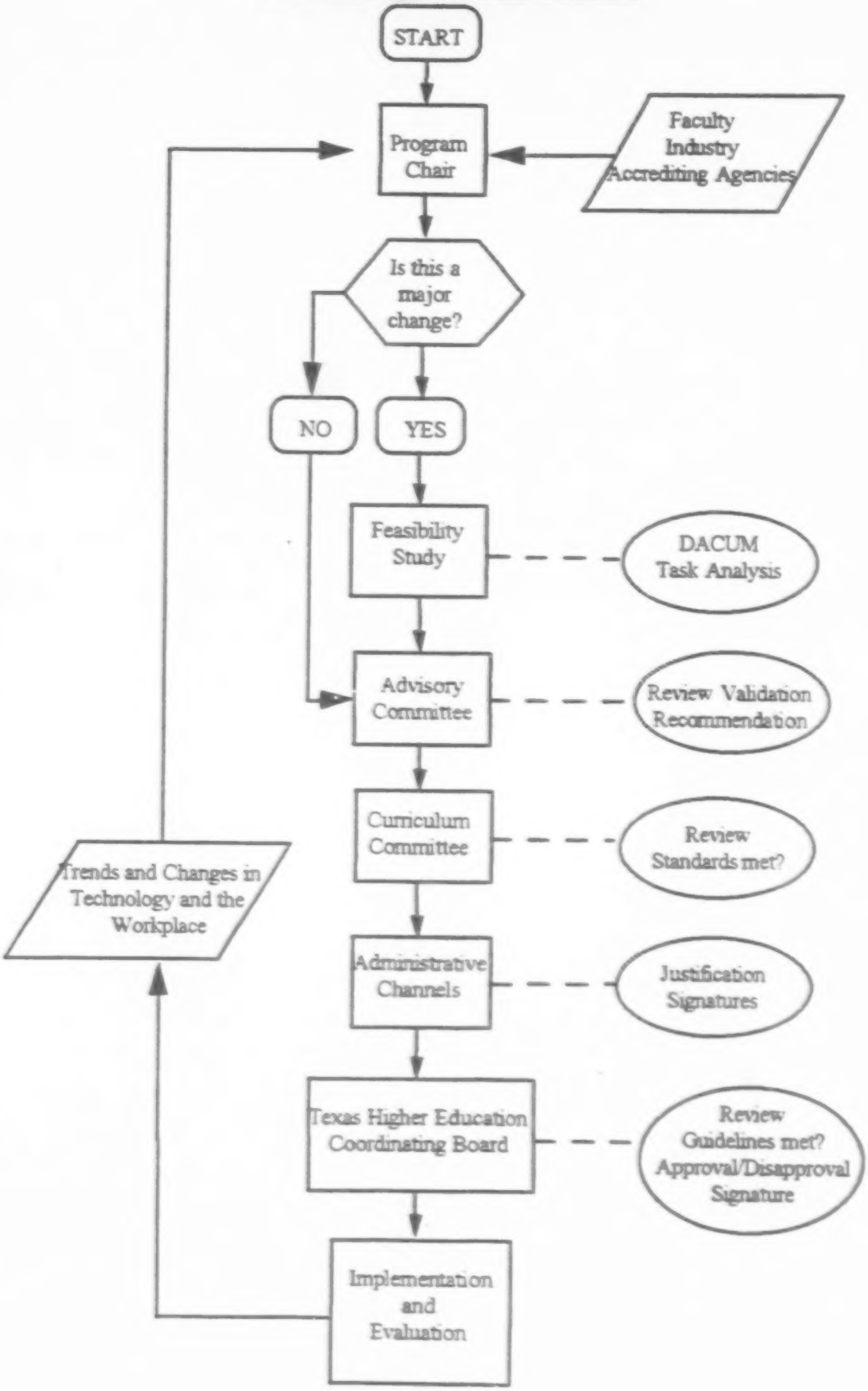
Mary Gifford
OST Department Chair-SPC

Delores Atkins
Business Information Systems-SPC

A College of the Alamo Community College District
1400 West Villaret Blvd., San Antonio, Texas 78224-2499, 210/921-5000

A-7.1-b-2

Texas State Technical College Harlingen
Flowchart for Curriculum Revisions


START
Program Chair
Faculty
Industry
Accrediting Agencies
Is this a major change?
NO
YES
Feasibility Study
DACUM
Task Analysis
Advisory Committee
Review Validation
Recommendation
Curriculum Committee
Review
Standards met?
Trends and Changes in Technology and the Workplace
Administrative Channels
Justification
Signatures
Texas Higher Education Coordinating Board
Review
Guidelines met?
Approval/Disapproval
Signature
Implementation and Evaluation

TECH - PREP[illegible]RRICULUM
6 - YEA[illegible]PLAN

Field of Specialization: Office Administration (Executive Secretary/Administrative Assistant Option) 1994-1995

	SECONDARY Diploma				POSTSECONDARY Associate of Applied Science Degree				Advanced Courses
SUBJECT	**Freshman**	**Sophomore**	**Junior**	**Senior**	**Freshman A**	**Freshman B**	**Sophomore A**	**Sophomore B**	**Tech-Prep Advanced Skills**
Math	Algebra I	Geometry	Algebra II	Math of Money				TMTH 1313	
English	English I	English II	English III	English IV			ENGL 1301	ENGL 2311	
Science	Science	Science	Science						
Computers			*Microcomputer Applications I (TEA 11673100)	Computerized Accounting *Business Computer Applications I (TEA 11672300)	*BUSI 1375 OFAD 1312	OFAD 2371 BUSI 1309	OFAD 2372	PSYC OR SOCI	
Humanities	American History Language	Language P.E./Health	World History Fine Arts	Government/ Economics		SPCH 1315 OR SPCH 1321			
Other	P.E.			Elective or Office Administration Coop			PHED Activity	PHED Activity	
Technical		Personal Business/ Record Keeping			OFAD 1314	OFAD 1301 OR OFAD 1303	OFAD 2311 OFAD 2312 OR MGMT 2315	OFAD 2375	OFAD 1371, 1372, 2374, OR *2376
Technical					ACCT 1371 BUSI 1304	ACCT 1372 MGMT 1312	BUSI 2304	Free Elective	OFAD 2375 MGMT 2314
CAREER EXIT POINTS				Entry-level Clerk/Typist		Secretary		Exec. Secretary/ Admin. Asst.	Exec. Secretary/ Admin. Asst. with Advanced Skills
Credits	6	6	6	6	15	18	16	16	9

Total Credits	24	Total Semester Hours	65

* Courses taken at ISD through articulation plans: Microcomputer Applications I (TEA 11673100/BUSI 1375); Business Computer Applications I (TEA 11672300/OFAD 2376)
^ Approved Electives:

I.S.D.: Friendswood (Friendswood High School	I.S.D. Representative: Nancy Mallini	Date: October 26,1994
College: San Jacinto College - Central/North/South FICE Code: 003609/012713/00090	College Representative: Clay Kelley/Gary Friery/Gary Fuller	Date: October 26,1994

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PROGRAM	I.S.D.	ARTICULATION AGREEMENTS		TECH PREP 6 YR PLAN
		H.S. COURSES	SJCD COURSES	
COMPUTER INFORMATION SYSTEMS				
. . Microcomputer Option	Dayton	Computer Science I	CSCI 1312	Fall 1995
		Advanced Word Processing	CSCI 1336	
		Microcomputer Applications	CSCI 1321/1336	
		Business Computer Programming I	CSCI 1312	
		Business Computer Applications I	CSCI 1336	
	Deer Park	Microcomputer Applications or Business Information Processing	CSCI 1321	Fall 1995
	Galena Park	Computer Science I	CSCI 1312	Fall 1995
		Microcomputer Applications	CSCI 1321	
		Business Applications I	CSCI 1321/1336	
		Business Applications II	CSCI 1312/1323	
		Business Information Processing	CSCI 1321	
	Pasadena	Business Computer Applications or Business Computer ProgrammingI & Business Computer ProgrammingII or Business Information Processing	CSCI 1321	Fall 1995
		Introduction to Programming	CSCI 1312	
. . Network Administration Option	Dayton	Business Computer Applications	CSCI 1336	Fall 1995
		Advanced Word Processing	CSCI 1336	
		Microcomputer Applications	CSCI 1321/1336	
		Computer Science I	CSCI 1312	
		Business Computer Programming	CSCI 1312	
	Deer Park	Microcomputer Applications or Business Information Processing	CSCI 1321	Fall 1995
	Galena Park	Computer Science I	CSCI 1312	Fall 1995
		Microcomputer Applications	CSCI 1321	
		Business Information Processing	CSCI 1321/1336	
		Business Computer Applications I	CSCI 1336	
		Business Computer Applications II	CSCI 1312/1323	
	Pasadena	Business Computer Applications or Business Computer ProgrammingI & Business Computer ProgrammingII or Business Information Processing	CSCI 1321	Fall 1995
		Introduction to Programming	CSCI 1312	
CRIMINAL JUSTICE				
. . Law Enforcement Option	Deer Park	Business Information Processing	CSCI 1321	Fall 1995
		Introduction to Criminal Justice	CRIJ 1301	

PROGRAM	I.S.D.	ARTICULATION AGREEMENTS H.S. COURSES	SJCD COURSES	TECH PREP 6 YR PLAN
PROCESS TECHNOLOGY	Deer Park	Electricity/Electronics	ELEC1210 ELEC 1310	Fall 1995
		Elem. Principles & Terminology	INST 1314	
		Microcomputer Applications or Business Information Processing	CSCI 1321	
	Pasadena	Business Computer Applications or Business Computer ProgrammingI & Business Computer ProgrammingII or Business Information Processing	CSCI 1321	Fall 1995
		Elem. Principles & Terminology	INST 1314	
		Voc. Electronics I	ELEC 1210	
		Voc. Electronics II	ELEC 1310	
RESPIRATORY CARE	Clear Creek	Health Science Tech I	RESC 1101	Fall 1995
		Health Science Tech II		
	Deer Park	Health Science Tech I		Fall 1995
		Health Science Tech II	RESC 1101	
	Pasadena	Health Science Tech I		Fall 1995
		Health Science Tech II	RESC 1101	
LICENSED VOCATIONAL NURSING	Galena Park	Anatomy/Physiology	VOCN 1301	Fall 1994
		Health Occupations Coop.	VOCN 1403	

Tech Prep Intergenerational Professions Six-year Plan

AAS with Advanced Skills Mastery Certificate

TPAD: Gerontology

High School					
Period	Grade 9	Grade 10	Grade 11	Grade 12	REC HS Prog.
1	English I *	English II *	English III *	English IV * (a)	Eng 4
2	Algebra I *	Geometry *	Algebra II *	Elective (d) Elective (d)	Math 3 Elec. 1
3	Biology *	Required Science * (c)	Required Science * (c)	Elective (b) Elective (b)	Sci 3 Elec. 1
4	World Geography *	World History *	U.S. History *	U.S. Govt. * Economics *	SS 4
5	Second Language I *	Second Language II *	Second Language III *	Fine Arts	SL 3 FA 1
6	Keyboarding or Elective * (d)	Elective (b) Elective (b)	Intergenerational Professions I	Intergenerational Professions II	CS 2 or Elec. 2 TP 2
7	Health * Elective (d)	Computer Science Course or Elective * (d)	Intergenerational Professions I	Intergenerational Professions II	Health .5 Elec. 1.5 TP 2
8	Elective (d) Elective (d)	Elective (d) Elective (d)	Elective (d) Elective (d)	Elective (d) Elective (d)	Elec. 4
Totals	8	8	8	8	32

Postsecondary				
Freshman Fall	Freshman Spring	Summer	Sophomore Fall	Sophomore Spring
English 3 **	Technical Writing 3 **	Computer Literacy 3 **	Contempory Issues in Aging 3	Psychology of Aging 3
Math or Science 3 **	Physiology of Aging 3		Interpersonal Skills 4	Interviewing and Counseling 3
Psychology I 3 **	Psychology II 4 **		Admin. of Elder Care Progs. 3 +	Abnormal Psychology 3
Sociology 3	Intro. to Residential & Foster Care 3		Principles of Accounting 3 +	Mgt. Techniques for Directors 3 +
Introduction to Human Service 3	Field Experience II 3		Field Experience III 4	Field Experience IV 4
Field Experience I 2				
17	16	3	17	16

** General education requirements (Min. 15 hrs.)

+ Advanced Skills (up to 84 hrs.)

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Home Economics Curriculum Center
Texas Tech University June, 1994

Chapter B

Essential and Exemplary Tech Prep Independent School District (ISD) Documents

This section is a work in progress and will be finished at a later date.

Section C

Essential and Exemplary Tech Prep College Documents

The Purpose and Use of College Documents for Tech Prep

Colleges and universities have the responsibility to provide administrative systems that are responsive to students transferring from high schools or other colleges. Most of the administrative decisions related to transfer of credit are based on information carried on some type of document; consequently, it is important to identify all documents that carry information about the student's Tech Prep education. Within any institution, identifying and helping the students to understand the fundamental processes of post-secondary systems are key to advancing their career plans. SPECAP in a two-year search, sought to find processes that facilitated rather than frustrated students as they attempted to move educational credits from one institution to another. The processes that link and facilitate the transfer of credit is termed "articulation." Articulation is a major operational objective for colleges. They are interested in attracting bright post-secondary students to their institutions, but more importantly they are interested in serving their constituencies by providing training programs that meet the specific needs of students and the imperatives of industries that will employ their graduates.

While colleges are eager to participate in educational systems that allow Tech Prep students to gain credits for work experience or appropriately articulated courses taken by students prior to entrance in college, the colleges do have the responsibility of assuring that their graduates perform at prescribed levels of technical competency. The responsibility for assuring the competencies of students who attain a diploma or certificate requires the college department to accept only courses that meet their accrediting agencies standards and the prescribed competencies of their business partners. With this responsibility kept in mind, colleges may recognize the following types of credit transfer:

1. Credit by Examination by the accepting department.
2. CLEP, AP, PEP.
3. Courses bearing a uniform number and title within WICHE or HEGIS systems.
4. Advanced Placement courses.
5. Continuing education or correspondence courses from an accredited college.
6. Competency-based course comparison.
7. Business, military, professional and trade association certified courses.
8. Articulated high school courses.
9. Dual-credit courses.
10. Workplace experiences that have accredited apprentice, clinical or intern programs.

Many of the Tech Prep programs and explanations of how to enter them are provided in individual college catalogs. For academicians, catalogs are a familiar document; however, for students and their parents college catalogs are an unknown source of information. Yet, they are indispensable documents in making the right choices in career planning. *The Tech Prep Handbook* is supplying three or four pages of catalog material so students and parents can see how programs are organized and how they can use this information in student planning. Since student may be transferring credits from high school to college and from college to college it is important for them understand the transfer policies of the institutions they attend. Specifically, students will want to know if they can receive college credit for their foreign language study, for advanced algebra and calculus, and for technical courses taken at high school and if they have to have foreign languages as part of their Tech Prep program. The college catalog usually will provide general answers to such questions.

The community colleges of Texas have developed a number of splendid Tech Prep component programs that rely on partnerships with the ISDs and their local businesses. For example, Ramona Vaughan and her associates at North Texas Tech Prep Consortia have created an articulated Computer Aided Design Program that articulates high school courses with Vernon Community College, and Midwestern State University. SPECAP has selected some exemplary documents used in that articulation process for inclusion in the Tech Prep Handbook. Persons wanting a more detailed description of the process should see Vaughan, R. (1996). Similarly, the apprenticeship program for Tech Prep requires a battery of documents related to company benefits, employment practices, drug testing, probation periods, attendance, and competency requirements. Apprenticeship programs also use an *Apprentice Log* that records the apprentice's work. For example the apprentice may be in the local mill on Tuesday and Friday for four hours each day and performing maintenance on Thursday while taking three or four courses. All successful apprentices complete an Associate of Applied Science degree that includes a large amount of Tech Prep work. The TPH can only supply a few essential documents. Greater detail about the exemplary program at Angelina College can be found in Lovelady, J. (1996).

In searching for essential and exemplary practices of Tech Prep we see the community college taking a very aggressive role in developing Tech Prep programs. Vaughan (1996) discusses the key leadership provided by Vernon Community College in developing and articulating five programs with other colleges and regional ISDs.

Description of Documents in this Section

In this section are flow charts showing courses and sequences in Tech Prep education. *A Hierarchy of Curriculum Devices* shows students and others that their successful course completion must be articulated in a particular fashion for them to be able to enter the World of Work.

Curriculum development documents are also within Section A. Jimmy Roberts, Director of Central Texas TPC, provides an outline of SCANS--Secretary's Commission on Achieving Necessary Skills. The WORKPLACE COMPETENCIES are some of the most important documents in the Tech Prep enterprise for they specify what skills students must have for a particular program. The Office Systems Technology Program Summary used by Odessa College has exemplary formatting and clear content.

Most Tech Prep programs are required to have an analysis of the program to determine its ability to meet business and industry needs. Documents describing DACUM analysis highlight this aspect of curriculum development.

The CUES Protocol is an evaluation process that allows students, teachers, and industry experts to rate essential knowledge elements for validity, usefulness, difficulty and self-efficacy. It is very power assessment tool for curriculum reform that meets the needs of students and industry as well as teachers.

Curriculum Guides and Registers of Essential Knowledge Elements supply examples of vital documents for developing Tech Prep programs. An example of courses needed is illustrated in the document on an Automated Manufacturing Technology program. This document provided by John Nieschwietz, Weslaco ISD, Tech Prep of the Rio Grande Valley, Inc., gives guidance as to the prerequisites and support courses needed for Tech Prep compatibility. Another example is the Industrial Electronics Curriculum Guide provided by Pat Bubb and Ray Anzaldus, Lower Rio Grande Valley Tech Prep Consortium and TSTC Conference Center.

Departmental Reports on Planning, Curriculum, and Assessment Practices as well as Brochures and Catalogs advertising are provided. The Transfer Planning Guide used at Southwest Texas State University. It has documents related to engineering technology, industrial technology, and Bachelor of Applied Arts and Sciences Degree requirements.

Transfer Planning Guides and Equivalency Guides from John De Leon of Southwest Texas State University provides an excellent example of policies that assist students in transferring credit.

Documents that allow us to analyze accreditation boards standards for Self-Study of Programs are included. For example, there is the Accreditation Board documents for Engineering and Technology. Self-Study Questionnaires that describe how Engineering and Technology Programs should be reviewed are provided. Documents showing how El Paso Community College uses Technical and Vocation Program Evaluation Reports are also included.

DEPARTMENT OF CRIMINAL JUSTICE
SECRETARY'S COMMISSION ON ACHIEVING NECESSARY SKILLS (SCANS)
WORKPLACE COMPETENCIES

f thirty-seven (37) workplace competencies surveyed by criminal justice ractitioners, the following thirteen (13) received a rating of 75% or better. hese competencies are addressed by this department using the four (4) criminal justice transfer curriculum courses required throughout the state of Texas. They are as follows:

I. INTERPERSONAL SKILLS (SERVING CUSTOMERS)
   A. Course/Content
      1. CRIJ 1301 Introduction to Criminal Justice: History and philosophy or criminal justice and ethical considerations; crime defined: its nature and impact; overview of criminal justice system; law enforcement; court system; prosecution and defense; trial process; corrections.
      2. CRIJ 1306 The Courts and Criminal Procedure: The judiciary in the criminal justice system; structure of American court system; prosecution; right to counsel; pre-trial release; grand juries; adjudication process; types and rules of evidence, sentencing.
   B. Assessment: Students will become familiar with listening and positive communications in various situations. Service is stressed. The various components of the criminal justice system and their services are emphasized.

II. BASIC SKILLS (LISTENING)
   A. Course/Content:
      1. CRIJ 1307 Crime in America: American crime problems in historical perspective; social and public policy factors affecting crime; impact and crime trends; social characteristics of specific crimes; prevention of crime.
      2. CRIJ 1310 Fundamentals of Criminal Law: A study of the nature of criminal law; philosophical and historical development; major definitions and concepts; classification of crime; elements of crimes and penalties using Texas statutes as illustrations; criminal responsibility.
   B. Assessment: Students attend classes, listen to instruction and examples then respond to verbal, written, and visual situations. Role playing is also utilized. Critical evaluation is developed through good listening habits.

III. PERSONAL QUALITIES (INTEGRITY/HONESTY)
   A. Course/Content
      1. CRIJ 1301 Introduction to Criminal Justice (see I.A.1.)
      2. CRIJ 1307 Crime in America (see II.A.1.)
      3. CRIJ 1310 Fundamentals of Criminal Law (see II.A.2.)

ODESSA COLLEGE
SCANS PROGRAM CERTIFICATION SUMMARY

PROGRAM TITLE: OFFICE SYSTEMS TECHNOLOGY	HEGIS: 5823
CREDENTIAL : AAS Medical Emphasis	CIP : 52.0401

SEMESTERS: 4 SemCrHrs: 68 Appr: 02/78 Revised: 09/94

The above technical program, including all technical and required academic courses have been evaluated with respect to their potential impact on student academic success and student job success. By completing this program, the successful student will demonstrate:

(BASIC SKILLS)

1.0. READING skill mastery by:

a. successfully passing the TASP exam

b. successfully completing ENGL 1301 or 1312

c. learning to read instructions as prescribed in each course

d. learning to read the detailed instructions so that patient records are accurate in OfST 1217

2.0 WRITING skill mastery by:

a. successfully passing the TASP exam

b. successfully completing ENGL 1301 or 1312

c. successfully completing OFST 2420

d. successfully completing the composition/proofreading tasks in OFST 2401, 2402, 2404, 2421, and 1217,

e. learning to compose essay portion of OFST 1322, 1404, 1406, 2304, 1207. 1217, and COSC 1301 and BIOL 2404

f. learning to compose documents in the workplace in OFST 2377

3.0 MATHEMATICS skills mastery by:

a. successfully passing the TASP exam

b. successfully completing MATH 1314, 1371, 1372 or 1324

DEGREE PLAN FOR AUTOMATED MANUFACTURING TECHNOLOGY PROGRAM
HIGH SCHOOL LEVEL (REGULAR PLAN)

SUBJECT	FRESHMAN	SOPHOMORE	JUNIOR	SENIOR
ENGLISH	ENGLISH I	ENGLISH II	ENGLISH III	ENGLISH IV
MATH	GRADE-LEVEL	GRADE-LEVEL	GRADE-LEVEL	
SCIENCE	GRADE-LEVEL	GRADE-LEVEL	GRADE-LEVEL	
SOCIAL STUDIES	WORLD AREA STUDIES	U.S. HISTORY	WORLD HISTORY	GOVERNMENT/ ECONOMICS
COMPUTER COURSE		MICROCOMPUTER APPLICATIONS		
*HEALTH & P.E.	HEALTH (1 SEM) & P.E. (1 SEM)	PHYSICAL EDUCATION		
ELECTIVES	ELECTIVE		ELECTIVE	ELECTIVE
(RECOMMENDED ELECTIVES) TECHNICAL SPECIALTY	TECHNOLOGY SYSTEMS	MANUFACTURING GRAPHICS	MANUFACTURING SYSTEMS MECHANICAL OR MACHINING SKILLS	INDUSTRIAL ELECTRONICS I/II OR COMPUTER MAINTENANCE I/II

*MUST ACCUMULATE 1 1/2 CREDITS OF P.E. AND 1/2 IN HEALTH THROUGHOUT HIGH SCHOOL YEARS

DEGREE PLAN FOR AUTOMATED MANUFACTURING TECHNOLOGY PROGRAM
HIGH SCHOOL LEVEL (ADVANCED PLAN)

SUBJECT	FRESHMAN	SOPHOMORE	JUNIOR	SENIOR
ENGLISH	ENGLISH I	ENGLISH II	ENGLISH III	ENGLISH IV
MATH	GRADE-LEVEL	GRADE-LEVEL	GRADE-LEVEL	GRADE-LEVEL
SCIENCE	GRADE-LEVEL	GRADE-LEVEL	GRADE-LEVEL	
SOCIAL STUDIES	WORLD AREA STUDIES	U.S. HISTORY	WORLD HISTORY	GOVERNMENT/ ECONOMICS
OTHER	FOREIGN LANGUAGE	FOREIGN LANGUAGE		
FINE ARTS				FINE ARTS
ELECTIVES				
COMPUTER COURSE			MICROCOMPUTER APPLICATIONS OR BUSINESS INFORMATION PROCESSING	
*HEALTH & P.E.	HEALTH (1 SEM) & P.E. (1 SEM)	PHYSICAL EDUCATION		
(RECOMMENDED ELECTIVES) TECHNICAL SPECIALTY	TECHNOLOGY SYSTEMS	MANUFACTURING GRAPHICS	MANUFACTURING SYSTEMS (MECHANICAL OR MACHINING SKILLS)	INDUSTRIAL ELECTRONICS I/II OR COMPUTER MAINTENANCE I/II

*MUST ACCUMULATE 1 1/2 CREDITS OF P.E. AND 1/2 IN HEALTH THROUGHOUT HIGH SCHOOL YEARS

CONTACT

WHO:

JOHN NIESCHWIETZ
MANUFACTURING SYSTEMS INSTRUCTOR

WHERE:

WESLACO HIGH SCHOOL
CAREER AND TECHNOLOGY EDUCATION CENTER
ROOM G-9

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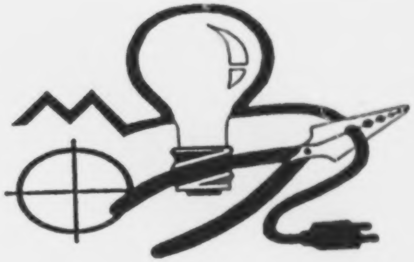
AUTOMATED MANUFACTURING TECHNOLOGY



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TECH PREP OF THE RIO GRANDE VALLEY INC.
WESLACO INDEPENDENT SCHOOL DISTRICT
WESLACO HIGH SCHOOL
CAREER AND TECHNOLOGY EDUCATION DEPT.
JOSE CALVILLO JR., CATE DIRECTOR
(210) 969-6703

AUTOMATED MANUFACTURING TECHNOLOGY

This program is directed towards those students who are seeking to specialize in any career(s) dealing with Automated Manufacturing Technology. This program is offered at the high school level in conjunction with Texas State Technical College at Harlingen.

CREDIT

Students enrolling under this program are awarded credit at the college level for the course(s) taken at the high school level. The courses must relate to one another and adhere to the Tech Prep program procedures. **UP TO 11 COLLEGE QUARTER HOURS CAN BE AWARDED!**

HIGH SCHOOL COURSES REQUIRED

Microcomputer Applications or Business Information Processing

Manufacturing Systems

Industrial Electronics

DEGREE

Associate of Applied Science
AAS + Advanced Skill Certificate

PREREQUISITES

A letter of intent must be signed and turned in to the course instructor. Students must enroll in the courses related to their chosen Tech Prep program.

SELECTION OF STUDENTS

Any student interested in the Automated Manufacturing Technology Tech Prep Program, must have a good understanding of what the program entails. They must then fill out a letter of intent and turn it in to the course instructor. Any student who fills out a letter, is considered for enrollment in the program.

TECH PREP: WHAT IS IT???

Tech Prep is a program set up throughout the State of Texas that allows partnerships within communities and schools.

The program is designed to allow high school students, who are interested in pursuing a secondary education, to accumulate college credit while enrolled in related high school courses.

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A student, for example, who enrolls at the high school level under this program, will be given credit for the related courses if he attends Texas State Technical College in Harlingen.

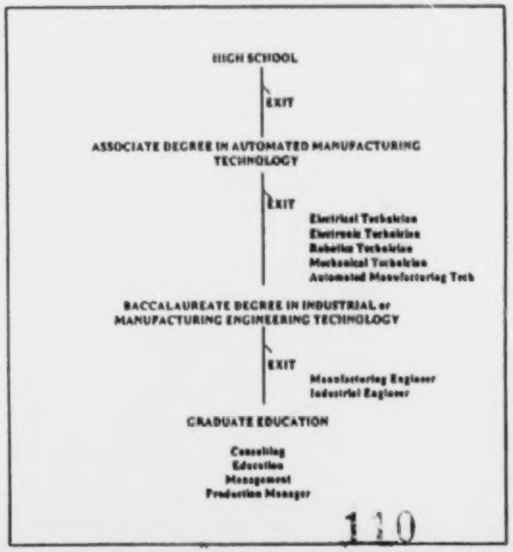
This program gives the student a head start in his/her college education. He/she will be almost 12 quarter credit hours ahead of those students who never had to opportunity to enroll in a high school Tech Prep Program.

The Weslaco Independent School District's Career and Technology Education Department is proud to bring this opportunity to its students. It encourages students to get their "foot in the door" and be better prepared for college. We encourage all of our students to become interested in Tech Prep and sign up.

CAREER PATH OPPORTUNITIES IN

AUTOMATED MANUFACTURING TECHNOLOGY

TEXAS STATE TECHNICAL COLLEGE


HIGH SCHOOL
EXIT
ASSOCIATE DEGREE IN AUTOMATED MANUFACTURING TECHNOLOGY
EXIT
Electrical Technician
Electronic Technician
Robotics Technician
Mechanical Technician
Automated Manufacturing Tech
BACCALAUREATE DEGREE IN INDUSTRIAL or MANUFACTURING ENGINEERING TECHNOLOGY
EXIT
Manufacturing Engineer
Industrial Engineer
GRADUATE EDUCATION
Consulting
Education
Management
Production Manager

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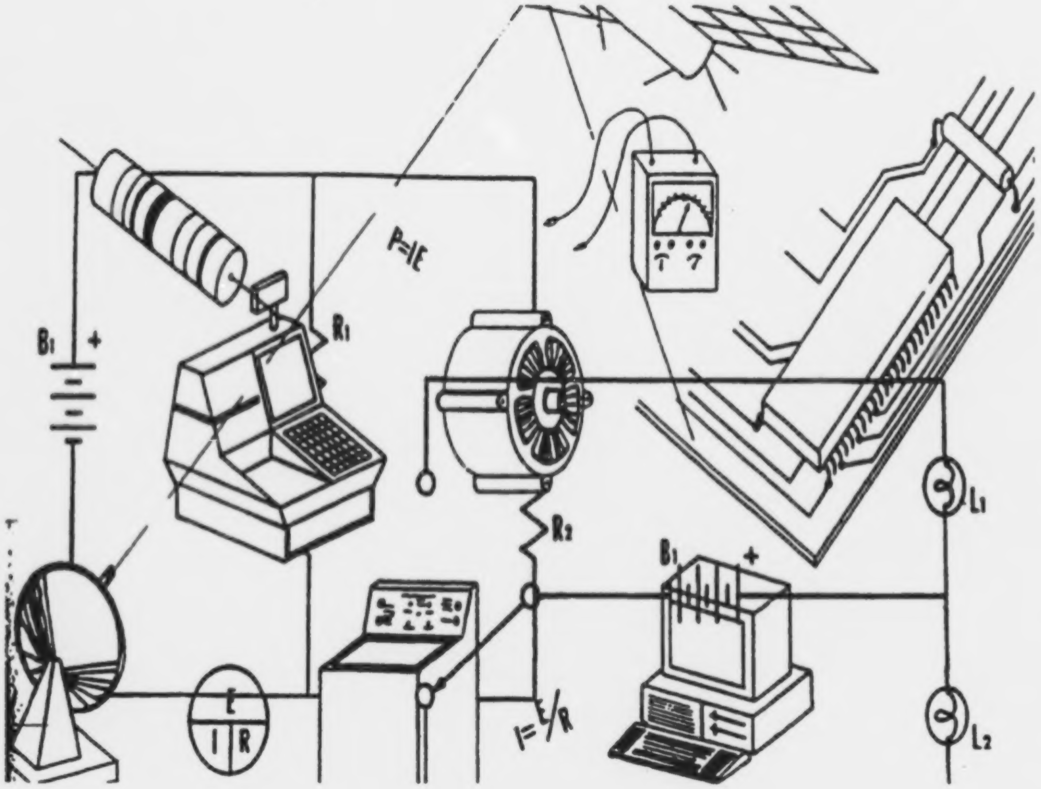
INDUSTRIAL ELECTRONICS CURRICULUM GUIDE



TECH PREP OF THE RIO GRANDE VALLEY, INC.

Lower Rio Grande Valley Tech Prep/Associate Degree Consortium
Mrs. Pat Bubb, executive Director
Ray anzaldua, director of MTL Operations
TSTC Conference Center
Harlingen, Texas 78550-3697
Voice: 210/425-0779; Fax: 210/425-0797

May 1995

- How to Use Curriculum Guide
- Essential Elements Common to All Career and Technology Courses
- Essential Elements for Industrial Electronics
- Tech Prep/TSTC Objectives
- Suggested Sequence by Section
- Instructional Delivery Outline (Teaching Sequence)
- Unit and Topic Objectives Met Through Effective Instruction
- Degree plans
- Careers (flow chart)
- TSTC proposed curriculum
- flyer/ advert
- TSTC task and objectives
- Course by course
    - description
    - reg. equipment
    - recom. texts, materials, supplies
    - prequistes
    - task with evaluation signature
    - course objectives to support task unit 1-10 and a-j

EEC 1104
AC Circuits

This course covers fundamentals of alternating current which includes series and parallel AC circuits, phasers, capacitive and inductive networks, transformers, resonance, filter and pulse characteristics. Emphasis is placed on methods of analysis and circuit measurements.

*Required Equipment For This Course:

Digital Multimeter-B&KPrecision model 2831
Soltec Oscilloscope 530 (30 MHz) Dual Trace
B & K Model 3011B-20MHz Function Generator
Heathkit (Zenith) ET-1000 CRT. Design Trainer
Analog Tenma #72-890 Multimeter (or Simpson 260 Meter)
Required equipment leads and electronic components to perform required tasks and objectives

*Equal brand or better may be substitute for above equipment
One set of above equipment for each work station with one student assigned to each work station.

Recommended Test Books, Materials and Supplies:

1. *Grob Basic Electronics*, by Bernard Grob, 7th Edition, 1994
2. *Experiments in Grob Basic Electronics*, by Pugh / Ponick; 3rd Edition, 1993.
3. *HyperGraphics Textnotes for Grob Basic Electronics*, by HyperGraphics, 1994.
4. Alligator clip leads (6)
5. Scientific calculator

PREREQUISITES:

DC Circuits – EEC 1004 or equivalent HS course
Student must be enrolled in High School Tech Prep Program

In order to master the tasks listed below, all course objectives must be met. In order for the high school participates to have flexibility in scheduling these objectives, they are listed after the last task rather than being included in the task block.

Task 1 Identify an alternation, cycle, period and frequency of an ac voltage waveform

☐ **Achieved Skill**

☐ **No Exposure-or Equipment**

Written Grade		▨	Performance Grade	
Training for this block was completed as indicated above.				
Student's Signature		Teacher's Signature		Date of Completion

TASK 2 Measuring voltage, current and power.

☐ **Achieved Skill**

☐ **No Exposure-or Equipment**

Written Grade		▨	Performance Grade	
Training for this block was completed as indicated above.				
Student's Signature		Teacher's Signature		Date of Completion

TASK 3 Measuring inductor, transformer, capacitor values and phases.

☐ Achieved Skill

☐ No Exposure-or Equipment

Written Grade		▨	Performance Grade	
Training for this block was completed as indicated above.				
Student's Signature		Teacher's Signature		Date of Completion

TASK 4 Analyzing inductive and capacitive circuits.

☐ Achieved Skill

☐ No Exposure-or Equipment

Written Grade		▨	Performance Grade	
Training for this block was completed as indicated above.				
Student's Signature		Teacher's Signature		Date of Completion

TASK 5 Constructing and analyzing complex circuits.

☐ Achieved Skill

☐ No Exposure-or Equipment

Written Grade		▨	Performance Grade	
Training for this block was completed as indicated above.				
Student's Signature		Teacher's Signature		Date of Completion

TASK 6 Constructing and analyzing circuits at resonance.

☐ Achieved Skill
☐ No Exposure-or Equipment

Written Grade		▨	Performance Grade	
Training for this block was completed as indicated above.				
Student's Signature	Teacher's Signature	Date of Completion		

TASK 7 Constructing and analyzing transient circuits.

☐ Achieved Skill
☐ No Exposure-or Equipment

Written Grade		▨	Performance Grade	
Training for this block was completed as indicated above.				
Student's Signature	Teacher's Signature	Date of Completion		

COURSE OBJECTIVES TO SUPPORT THE TASKS LISTED ABOVE.

The course objectives are based on the tasks listed above. Additional objectives can be added to your task; however, in order to meet TSTC requirements, the following objectives must be taught. The order of presentation is at each schools discretion.

UNIT 1. The student will discuss the origin and history of magnetism and the factors that determine the strength of magnetic fields a used in relays, motors, generators, and transformers. The student will analyze the principles of AC generation; recognize the different types of AC waveforms and calculate frequency, time and wavelength of AC waveforms. Also calculate average, effective (RMS), peak and peak to peak values of sinusoidal waveforms.

While completing this unit, each student will:

A. differentiate between natural and artificial (manmade) magnets and divide them further into permanent and temporary types..
B. explore magnetic domains and how they affect magnetic fields to include polarity and field direction.
C. describe the relationship between electrical current and magnetism and solenoid concentration of a magnetic filed.
D. explore the relationship between magnetomotive force, magnetic flux, flux density, field intensity and permeability.
E. analyze the B–H curves and the different losses encountered in electromagnetic circuits.
F. analyze the basic principles of AC generation.
G. define a cycle of AC in terms of alternations, degrees, and radians.
H. consider AC from the aspects of frequency, angular velocity, period, and wavelength.
I. recognize the difference between AC and DC symbols.
J. determine peak to peak, peak, average and effective (RMS) values of sine wave voltages.
K. compare the phase relationships of voltage and current in purely resistive circuits.
L. analyze vector and phaser values as they apply to AC circuits.
M. evaluate the applications of polyphase voltages.

UNIT 2 The student will define inductance, explain solenoid operation, discuss the mutual effects of two closely associated coils. Also, the factors affecting inductance and determining total inductance in series and parallel connected inductors. The student will analyze transformer circuits; calculate voltage, current, power and impedance using the turns ratio; explore some of the more common applications and recognize the characteristics of specific types of transformers.

While completing this unit, each student will:

A. define both self and mutual inductance and the factors that determine the strength of the induced voltages.
B. explain the nature of inductance and counter–electromotive force.
C. recognize the symbology representing the different types of inductors.
D. discover how energy may be stored in an electro–magnetic field.
E. calculate total inductance for inductors connected in series and parallel.
F. identify the different types of transformers.

G. analyze transformer principles.
H. compare the relationship of voltage, current, power and impedance to turns ratios.
I. identify and describe the various losses of transformers and inductors.
J. differentiate between core types, the application of each type, and recognize the symbols for each.
K. analyze the loading effect and impedance transformation characteristics.
L. evaluate the application of Autotransformers, the requirements for Isolation transformers and how the use of one dictates the use of the other.
M. analyze the characteristics and applications of Radio Frequency Transformers.
N. explain the transforms Connections for Three–Phrase Circuits.

UNIT 3 The student will evaluate reactance and how it opposes alternating current and alters the phase relationship between voltage and current in AC circuits.

While completing this unit, each student will:

A. calculate Inductive reactance, total reactance for series and parallel circuits, and graph the relationship between inductive reactance and frequency.
B. determine the phase relationship between voltage and current in an inductive current.
C. evaluate power in purely inductive current.
D. compare the different methods for determining impedance (Z) in series and parallel circuit and methods for reducing these circuits to a simple series equivalent circuit.
E. solve for impedance (Z) of parallel reactive circuits using inductance, susceptance and admittance (minimum coverage).
F. solve for impedance in complex series–parallel AC networks.
G. apply Thevenin's and Norton's Theorems to the solution of AC circuits.
H. solve for voltages, current, impedance (Z), and phase angles in series RL reactive circuits.
I. solve series reactive circuits using Ohm's and Kirchhoff's law.
J. solve parallel reactive circuits using Ohm's and Kirchhoff's law.
K. differentiate between true and apparent power and the power factor in AC circuits.
L. recognize the differences between AC and DC meters and the application of Wattmeters.
M. manipulate equations and solve problems involving reactive circuits.
N. perform vector algebra and solve reactive circuit.

UNIT 4. The student will evaluate capacitive reactance and how it changes in value in value with varying frequency. Circuits that combine capacitive reactance (Xc) and resistance (R) will be analyzed.

While completing this unit, each student will:

A. calculate capacitive reactance, total reactance for series and parallel circuits, and graph the relationship between capacitive reactance and frequency.
B. determine the phase relationship between voltage and current in a capacitive circuit.
C. evaluate power in purely capacitive.
D. compare the different methods for determining impedance (Z) in series and parallel circuit and methods for reducing these circuits to a simple series equivalent circuit.
E. solve for impedance (Z) of parallel reactive circuits using inductance, susceptance and admittance (minimum coverage).
F. solve for impedance in complex series–parallel AC networks.
G. apply Thevenin's and Norton's Theorems to the solution of AC circuits.

H. Solve for voltages, current, impedance (z), and phase angles in series RC reactive circuits.
I. solve series reactive circuits using Ohm's and Kirchhoff's law.
J. solve parallel reactive circuits using Ohm's and Kirchhoff's law.
K. differentiate between true and apparent power and the power factor in AC circuits.
L. manipulate equations and solve problems involving reactive circuits.
M. perform vector algebra and solve reactive circuits using this procedure.

UNIT 5 The student will analyze tuned circuits and how they are used in communication devices to select a desired frequency, calculate the resonant frequency of an LC combination and calculate the required value of C to resonate with a given L to produce a desired circuit. The student will recognize the basic characteristics of the common filters used in modern electronic equipment, calculate the component values for these basic filters and measure their performance in decibels or other usable standards.

A. define Resonance.
B. analyze Series Resonant Circuits including the basic characteristics.
C. evaluate the Q of a resonant circuit and its effects on the circuit, how it may be changed and its effects on circuit bandwidth.
D. explore the concepts of an Ideal Parallel Resonant Circuit.
E. analyze Parallel Resonant Circuits and then compare them with Series Resonant Circuits.
F. analyze the effects of dampening a parallel resonant circuit and how it affects the Q and Bandwidth of the circuit.
G. analyze the frequency.response curves, Bandwidth, and Bandpass of a resonant circuit. Also, the relative amplitudes of the voltages, currents and impedances used to establish the limits of the curves.
H. evaluate Tuning, Bandspreading and the advantages of Multiple Tuned Stages.
I. recognize High–Pass Filters by component types and placement, their application and their frequency response curves.
J. recognize Low–Pass Filters by component types and placement, their application and their frequency response curves.
K. recognize Bandpass Filters by component types and placement, their application and their frequency response curves.
L. analyze Constant–k and m–Derived Filters and their application their applications and their frequency response curves.

SOUTHWEST TEXAS STATE UNIVERSITY/SAN ANTONIO COLLEGE
TRANSFER PLANNING GUIDE
1994-96 CATALOG

For major in Engineering Technology
Bachelor of Science in Technology

SAC COURSE OF STUDIES

First Semester
____ English 1301*
____ History 1301
____ Math 2413*
____ Chemistry 1411*
____ Speech 1311 or 1321

Second Semester
____ English 1302
____ History 1302
____ Math 2414*
____ Chemistry 1412
____ English 2311

Third Semester
____ Physics 1570
____ Drafting 1305*
____ Government 2301
____ Literary Perspective--3 hrs.[1]
____ Physical Education Activity--1 hr.

Fourth Semester
____ Physics 2570
____ Engineering 2332*
____ Government 2302
____ Philosophy 1301
____ Economics 2302

*Course may have prerequisite required by San Antonio College.
[1] Select one from: English 2322, 2323, 2327, 2328, 2332, 2333.

SWT COURSE OF STUDIES

First Semester Junior Year
____ Computer Information Systems 3370
____ Physics 3315 or 3317
____ Technology 2344
____ Art 3313, Music 3313, or Theatre 3313
____ Physical Education Activity-- 1hr.
____ Physics 2435

Second Semester Junior Year
____ Technology 4345
____ Technology 4362
____ Math 3305 or Computer Science 3318
____ Math 3323
____ Management 3303
____ Economics 3313 or 3335

First Semester Senior Year
____ Management 4330
____ Technology 3322 (International Perspective)
____ Technology 3364
____ Math 3348
____ Engineering Technology Specialization--6 hrs.[1]

Second Semester Senior Year
____ Technology 4357
____ Technology 4390--6 hrs. (twice)
____ Engineering Technology Specialization--6 hrs.[1]
____ Math 3375

[1] See pages 105 & 106 of the SWT catalog for options on the specializations.

Note: Students should have received credit for at least two years of one foreign language as part of their high school education. Students graduating from high school after January, 1988 who have not completed two years of the same foreign language are required to take 6 to 8 hours of a modern foreign language as part of the general studies curriculum.

Revised 11/95

SOUTHWEST TEXAS STATE UNIVERSITY/SAN ANTONIO COLLEGE
TRANSFER PLANNING GUIDE
1994-96 CATALOG

For major in Industrial Technology
Bachelor of Science in Technology
Concentration in Construction

SAC COURSE OF STUDIES

First Semester
____ English 1301*
____ History 1301
____ Math 1314*
____ Chemistry 1411*
____ Computer Science 1301 or CIS 1301

Second Semester
____ English 1302
____ History 1302
____ Engineering Technology 2434*
____ Chemistry 1412
____ Speech 1311 or 1321

Third Semester
____ Engineering 2332*
____ Drafting 1305*
____ Government 2301
____ Math 1316 or 2412
____ Physics 1401*

Fourth Semester
____ English 2311
____ Electronics 1407
____ Government 2302
____ Philosophy 1301
____ Physics 1402

*Course may have prerequisite required by San Antonio College.

SWT COURSE OF STUDIES

First Semester Junior Year
____ Art 3313, Music 3313, or Theatre 3313
____ Technology 1320
____ Technology 1330
____ Technology 3310
____ Technology 3364
____ Physical Education Activity--1hr.

Second Semester Junior Year
____ Literary Perspective--3 hrs.[1]
____ Technology 2360
____ Technology 3313
____ Technology 4345
____ Management 3303
____ Physical Education Activity-- 1 hr.

First Semester Senior Year
____ Management 3303
____ Technology 3322 (International Perspective)
____ Technology 4313
____ Technology 4357
____ Technology 4360
____ Technology 4380

Second Semester Senior Year
____ Technology 4361
____ Technology 4390--6 hrs. (twice)
____ Management 4330
____ Geography 3303
____ Economics 2320

[1] See General Studies, page 50 of the SWT catalog, for options.

Note: Students should have received credit for at least two years of one foreign language as part of their high school education. Students graduating from high school after January, 1988 who have not completed two years of the same foreign language are required to take 6 to 8 hours of a modern foreign language as part of the general studies curriculum.

Revised 11/95

SOUTHWEST TEXAS STATE UNIVERSITY/SAN ANTONIO COLLEGE
TRANSFER PLANNING GUIDE
1994-96 CATALOG

For major in Industrial Technology,
Bachelor of Science in Technology
Concentration in Manufacturing

SAC COURSE OF STUDIES

First Semester
____ English 1301*
____ History 1301
____ Math 1314*
____ Chemistry 1411*
____ Engineering Tech 2444*

Second Semester
____ English 1302
____ History 1302
____ Math 1316 or 2412
____ Chemistry 1412
____ Economics 2302

Third Semester
____ Engineering 2332*
____ Drafting 1305*
____ Literary Perspective–3 hrs.[1]
____ Government 2301
____ Physical Education Activity–1 hr.
____ Physics 1401*

Fourth Semester
____ English 2311
____ Electronics 1407
____ Philosophy 1301
____ Government 2302
____ Physics 1402

*Course may have prerequisite required by San Antonio College.
[1] Select one from: English 2322, 2323, 2327, 2328, 2332, 2333.

SWT COURSE OF STUDIES

First Semester Junior Year
____ Art 3313, Music 3313 or Theatre Arts 3313
____ Technology 2344
____ Technology 1330
____ Technology 3310
____ Technology 3364
____ Speech 1310

Second Semester Junior Year
____ Technology 3322 (International Perspective)
____ Technology 4345
____ Technology 4380
____ Physical Education Activity–1 hr.
____ Technology 1310
____ Management 3303

First Semester Senior Year
____ Management 4330
____ Technology 4330
____ Technology 4357
____ Technology 4362
____ Technology 4373

Second Semester Senior Year
____ Technology 4374
____ Technology 4390–6 hrs. (twice)
____ Technology 4391
____ Geography 3303

Note: Students should have received credit for at least two years of one foreign language as part of their high school education. Students graduating from high school after January, 1988 who have not completed two years of the same foreign language are required to take 6 to 8 hours of a modern foreign language as part of the general studies curriculum.

Revised 11/95

SOUTHWEST TEXAS STATE UNIVERSITY/SAN ANTONIO COLLEGE
TRANSFER PLANNING GUIDE
1994-96 CATALOG

For major in Industrial Technology
Bachelor of Science in Technology
Concentration in Visual Communication

SAC COURSE OF STUDIES

First Semester

____ English 1301*
____ History 1301
____ Math 1314*
____ Chemistry 1411*
____ Photography 1370

Second Semester

____ English 1302
____ History 1302
____ Math 1316 or 2412
____ Chemistry 1412
____ Photography 1371

Third Semester

____ Engineering 2332*
____ Drafting 1305*
____ Government 2301
____ Literary Perspective–3 hrs.[1]
____ Physics 1401*

Fourth Semester

____ English 2311
____ Electronics 1407
____ Government 2302
____ Philosophy 1301
____ Physics 1402

*Course may have prerequisite required by San Antonio College.

[1] Select one from: English 2322, 2323, 2327, 2328, 2332, 2333.

SWT COURSE OF STUDIES

First Semester Junior Year

____ Art 3313, Music 3313, or Theatre 3313
____ Technology 2344
____ Technology 2365
____ Economics 2320
____ Technology 1310
____ Physical Education Activity–1hr.

Second Semester Junior Year

____ Technology 3322 (International Perspective)
____ Technology 3310
____ Technology 3364
____ Technology 4345
____ Physical Education Activity–1 hr.
____ Speech 1310

First Semester Senior Year

____ Management 3303
____ Technology 3350
____ Technology 3365
____ Technology 4310
____ Technology 4380

Second Semester Senior Year

____ Technology 4357
____ Technology 4390–6 hrs. (twice)
____ Management 4330
____ Geography 3303

Note: Students should have received credit for at least two years of one foreign language as part of their high school education. Students graduating from high school after January, 1988 who have not completed two years of the same foreign language are required to take 6 to 8 hours of a modern foreign language as part of the general studies curriculum.

Revised 11/91

SOUTHWEST TEXAS STATE UNIVERSITY/SAN ANTONIO COLLEGE
TRANSFER PLANNING GUIDE
1994-96 CATALOG

For major in Information Systems Management
Bachelor of Science in Technology

SAC COURSE OF STUDIES

First Semester
____ English 1301*
____ History 1301
____ Math 2413*
____ Chemistry 1411*
____ Computer Information Systems 1328*

Second Semester
____ English 1302
____ History 1302
____ Math 2414
____ Chemistry 1412
____ Speech 1311 or 1321

Third Semester
____ Physics 1401*
____ Computer Information Systems 1326*
____ Government 2301
____ Literary Perspective–3 hrs.[1]
____ Engineering 2332*

Fourth Semester
____ Physics 1402
____ English 2311
____ Government 2302
____ Computer Information Systems 1333*
____ Drafting 1305*

*Course may have prerequisite required by San Antonio College.
[1] Select one from: English 2322, 2323, 2327, 2328, 2332, 2333.

SWT COURSE OF STUDIES

First Semester Junior Year
____ Computer Information Systems 3322 or 3372
____ Computer Information Systems 3370
____ Economics 2320
____ Technology 2330
____ Technology 2370

Second Semester Junior Year
____ Technology 4345
____ Technology 4372
____ Technology 4373
____ Technology 4374
____ Physical Education Activity–1 hr.
____ Philosophy 1305

First Semester Senior Year
____ Management 3303
____ Technology 3322 (International Perspective)
____ Technology 3364
____ Technology 4399
____ Physical Education Activity–1 hr.
____ Art 3313, Music 3313, or Theatre 3313

Second Semester Senior Year
____ Computer Information Systems 3374 or 4344
____ Technology 4357
____ Technology 4375
____ Technology 4390–6 hrs. (twice)

Note: Students should have received credit for at least two years of one foreign language as part of their high school education. Students graduating from high school after January, 1988 who have not completed two years of the same foreign language are required to take 6 to 8 hours of a modern foreign language as part of the general studies curriculum.

Revised 11/91

TECHNICAL AND VOCATIONAL PROGRAM EVALUATION REPORT
EL PASO COMMUNITY COLLEGE
March 6-8, 1991

The purpose of the Coordinating Board Technical and Vocational Program Evaluation is not only to comply with federal and state policy but it is also to provide the institution with an external review of the effectiveness of programs for use in planning purposes. To achieve this, teams of technical experts from across the state were used to evaluate your technical and vocational programs and provide appropriate commentary to commend outstanding programs in place and to pinpoint where corrective action could be made to improve programs. It is our hope that this process can be an effective factor in your ongoing program improvement process.

The following evaluation elements as specified in the "Technical and Vocational Program Guidelines" (page 14) are considered both quantitatively and qualitatively: mission, need, curriculum, enrollment, graduates, student placement, follow-up results, program costs, facilities and equipment, articulation agreements, instructional practices, student services, public and private linkages, and qualifications of personnel.

The evaluation process includes the following elements:

- Site Evaluation Instrument.
  Rates each program in the areas of:

  a. Service area importance
  b. Educational process effectiveness - including curriculum planning and revision, articulation, equipment and facilities, instruction and instructional materials, student services, and public/private linkages
  c. Program products
  d. Costs
  e. Future trends

- Institutional Self-Ratings (on the Site Evaluation Instrument).

- Observer Ratings (on the Site Evaluation Instrument). Each program head is interviewed by teams of technical experts who are peers from various institutions in the state.

The Evaluation Report is presented in the following order:

1. Lists. A list of the evaluation team members and a list of the programs which were evaluated.

2. General observations. After interviewing each technical and vocational program head, the evaluation team discussed common findings which they observed during the visit. The result of this collaborative effort by the entire team is compiled in the section, General Observations.

Section D

Essential and Exemplary Tech Prep Documents from the Disciplines

The Purpose and Use of Tech Prep Documents from Disciplines, Unions and Guilds.

We are particularly interested in discussing the essential and exemplary documents used by the various disciplines in the Tech Prep enterprise for there are three processes that are making a profound impact on education in general.

1. The **DACUM** job analysis process has been a staple curriculum development device for vocational and technical for many years. DACUM is an acronym that stands for the phrase **D**eveloping **A** **cu**rricul**um**. The *DACUM Handbook* is available from the Publications Unit of the Center on Education and Training for Employment, The Ohio State University. Many vocational and technical education departments and industry trainers have used DACUM processes to analyze a wide variety of jobs effectively and efficiently at a relatively reasonable cost. Robert E. Norton in C-23.20-a-1 provides an excellent description of how this process works. This process is of particular interest to academic educators who have not used this process to construct their curricula.

2. The SCANS skills. In 1990, the Secretary of the US Department of Labor formed a commission to determine the skills required for entry-level employment for American workers and advise him on knowledge needed for the workplace. After a year of extensive research and interviews with business owners, union leaders, supervisors and laborers in wide range of industries, the Commission issued: *What Work Requires of Schools*. The Secretary's Commission on Achieving Necessary Skills (SCANS) report has had a tremendous impact on Texas education. All Tech Prep and complementary programs must conduct a review to determine if the school course are developing the following:

1. Foundation Skills
    a. Basic Skills
    b. Thinking Skills
    c. Personal Qualities
2. Work Place Competencies
    a. Resources
    b. Interpersonal Skills
    c. Information
    d. Systems
    e. Technology

Description of Documents in this Section

Faculty Professional Development (FPD). Faculty Professional Development is seen throughout the state as the key component in the development, acceptance and adoption of Tech Prep programs. Jimmy Roberts is recognized nationally as a leader in FPD and his teacher workshops are in great demand. Document 30.30 Teacher Resource Guide prepared by Jimmy Roberts, Central Texas Tech Prep Consortium provides an exemplary document for guiding applied academics and curriculum integration.

Section D also includes DACUM AND SCANS documents such as the DACUM AND TECH PREP: DYNAMIC DUO by Robert E. Norton. Jimmy Roberts, Central Texas Tech Prep Consortium provides some fundamental knowledge related to conducting SCANS analysis of a curriculum.

There is a subsection containing documents for Degree and Certification Programs as well as documents regarding The Structure of Knowledge Models for a Particular Discipline. A validated model of the Structure of Knowledge for Mathematics is provided by Ken Tunstall, Texas Higher Education Coordinating Board. The Structure of Knowledge for Nursing was created by Carol Boswell, Department of Nursing, Odessa College. The Calculus Register: A Mathematical Knowledge Register for Tech Prep, Peter Sisler, Higher Education Program, College of Education, Texas Tech University shows how essential knowledge elements can be organized under a model that functionally classified calculus and allows the user of his program to access any knowledge element by several search techniques.

Another subsection is directed toward the Essential Competencies of Texas Graduates of Education Programs in Nursing. The comprehensive document included in this subsection was prepared by Nursing Education Advisory Committee (NEAC) Report, Board of Nurse Examiners for the State of Texas, Board of Vocation Nurse Examiners, March, 1993.

Program Accreditation Standards for the Disciplines' are provided. The Standards of professional associations such as Southern Association of Colleges and Schools, The Board of Vocation Nurse Examiners, American Academy of Environmental Engineers, etc., Section 37.5-DF, NEAC Competencies, are listed. The Essential Competencies of Texas graduates of Education Programs in Nursing is a valuable document for nursing and is an exemplar for other disciplines. Documents included show Nursing Manpower: Trends and Issues and Executive Summaries of the Nurse Examiners Advisory Committee studies.

Accreditation Board for Engineering and Technology
United Engineering Center
345 East 47th Street, New York, New York 10017

VOLUME II

SELF-STUDY QUESTIONNAIRE FOR REVIEW of ENGINEERING PROGRAMS

to the
Engineering Accreditation Commission

Participating Bodies

American Academy of Environmental Engineers
American Congress on Surveying and Mapping
American Institute of Aeronautics and Astronautics, Inc.
American Institute of Chemical Engineers
American Institute of Mining, Metallurgical and Petroleum Engineers
American Nuclear Society
American Society of Agricultural Engineers
American Society of Civil Engineers
American Society for Engineering Education
American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.
The American Society of Mechanical Engineers
The Institute of Electrical and Electronics Engineers, Inc.
Institute of Industrial Engineers, Inc.
National Council of Engineering Examiners
National Institute of Ceramic Engineers
National Society of Professional Engineers
Society of Automotive Engineers
Society of Manufacturing Engineers
Society of Naval Architects and Marine Engineers

Member Bodies

American Society for Nondestructive Testing, Inc.
American Society of Safety Engineers
Instrument Society of America
Society of Engineering Science

EC 27A

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THE ENGINEERING SCHOOL

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Central Texas Tech Prep Consortium

Teacher Resource Guide

Applied Academics and Curriculum Integration

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The Model

Tech Prep as defined in federal legislation is both a program and a philosophy. The program aspects of Tech Prep are reflected in articulation agreements, coherent sequences of courses from secondary to post-secondary schools, and the consortium structure. The philosophical underpinnings of Tech Prep are reflected in curriculum development and instructional methodologies. Tech Prep advocates authentic learning through applied academics and academic vocational integration. The classroom teacher's influence in a Tech Prep program is felt strongly in curriculum design and instructional delivery. For this reason, the participants of the 1994 Summer Workshop spent the majority of the time focusing on developing examples of integrated, applications-based lessons in different subject areas.

The following narrative describes the process used to develop the examples which appear in this guide.

The lesson plan model used by the workshop participants is based on the single-subject, stand alone class structure. This is the classroom model most often used and potentially creates the most difficulties for implementing an integrated curriculum. It also is a structure in which the classroom teacher retains significant decision making power in the realms of curriculum and instruction.

The participants were divided into work teams, and each team was assigned a subject field. The team members then chose a content area on which to focus and further defined the scope of the lesson by setting parameters under which they would work. In the examples, the parameters are listed under the lesson title.

After the teachers defined the topic they would explore, the next step was to identify key definitions and concepts to be covered in the lesson. The teachers representing the subject area under consideration took the lead in these first steps. The next step was for the team to brainstorm connections across discipline lines. Since each team was composed of people from a variety of disciplines reflecting diverse backgrounds, this step was rich with discussion and ideas.

The hard work began next. From the ideas generated by the "connections," the team members developed integration activities which reflected the cross-discipline connections identified. Applications were then identified which resulted from the activities or which encompassed the activities. The applications were attempts to develop classroom projects or problem-based simulations which approached real-world situations.

Each lesson contains a correlation with the SCANS competencies, The SCANS competencies which correspond to the coding system are located on pages 26 and 27. Assessment techniques are suggested for each lesson and some of the example plans list other ideas and possible resources. The authors of the lessons are listed at the end of each plan.

DACUM AND TECH PREP: DYNAMIC DUO

by
Robert E. Norton

TECH PREP is designed to prepare a workforce for America which is second to none. The 1990 Perkins II Act proposes to accomplish this goal by supporting educational programs that will develop in students the "competencies" needed to work in a technologically advanced society. It further specifies that TECH PREP programs must be developed by consortia of secondary and postsecondary institutions. In developing regulations for TECH PREP, the U.S. Department of Education has specified that programs be developed in consultation with business, industry, and labor.

Most educators are, and all should, take the challenge to reform education with TECH PREP seriously. The Oregon State Board of Education, for example, has called for 50/50 partnerships between:

- Academic and Vocational-Technical Educators
- Secondary and Postsecondary Educators
- Employers and Educators

But how do we get secondary and postsecondary educators to work in a fully collaborative manner? And even more challenging in many cases, how can we get business and industry to cooperate with vocational-technical educators?

One significant technique for initiating the needed cooperation is through appropriate use of the DACUM job analysis process. DACUM has been effectively used for many years by community colleges and business-industry trainers to analyze all types of jobs quickly and efficiently and at a relatively low cost. Tasks or competencies identified during the analysis become the basis for curriculum development and training efforts which follow.

DACUM now is being rediscovered by many TECH PREP program managers as a process that can spark and even ignite the fires of cooperation. It can be used to rigorously and quickly identify the real-world competencies that workers need to be successful in a technologically advanced society. In implementing TECH PREP and using the DACUM process for job analysis, many program directors are asking postsecondary and secondary educators each to identify half of the 5 to 12 expert workers to serve on the panel. There is no need to describe the many benefits that educators can derive from these contacts and cooperative efforts alone.

The next phase of serious linkage and partnering takes place when the panel of 5 to 12 top performers (expert workers) from as many different businesses come together for two days to interact and precisely describe their jobs in great detail. The workers in a regular DACUM are not hampered or constrained by a literature base or any instructor-created document. Instead, the DACUM panel starts with a blank wall and, with the help of a trained process facilitator, proceeds to identify in a comprehensive and precise manner every duty and task they must perform to be successful. The synergism and consensus that result when the top performers interact with each other is impossible to describe. The workers' involvement is substantive and substantial, and can spark the kind of partnerships needed.

Previous participants frequently report "partner" companies offering to loan or donate equipment, provide subject-matter experts, host tours, offer coop or apprenticeship opportunities, and assist in many other appropriate ways. Many a significant and meaningful partnership has begun with a DACUM workshop. Properly nurtured, most have continued with the result of many benefits accruing to each partner.

If you are moving ahead with TECH PREP planning and implementation, you owe it to your students to give DACUM a try. More details about DACUM: a proven and powerful research approach to occupational analysis follows.

DACUM (Developing A Curriculum), is an approach to job/occupational analysis. DACUM has proven to be a very effective method of quickly determining, at relatively low cost, *what* tasks must be performed by persons employed in a given job or occupational area.

The profile chart that results from the DACUM analysis is a detailed and graphic portrayal of the duties and tasks involved in the occupation or job being studied. An example of a DACUM chart is attached. The DACUM analysis can be used as a basis for:

- Curriculum development
- Curriculum review and revision
- Training needs assessments
- Competency test development
- Worker performance evaluations
- Student recruitment
- Student counseling
- Student achievement records
- Training program review
- Curriculum articulation
- Tech prep program development
- Job modifications
- Job descriptions

DACUM has been successfully used to analyze occupations at the managerial, supervisory, technical, skilled, and semi-skilled levels. DACUM operates on the following three premises:

- *Expert workers* are better able to describe or define their job than anyone else.

- Any job can be effectively and sufficiently described in terms of the *tasks* that *successful* workers in that occupation perform.

- All tasks have direct implications for the *knowledge* and *attitudes* that workers must have in order to perform the tasks correctly.

A carefully chosen group of 5-12 expert workers from the occupational area under consideration form the DACUM committee. Committee members are recruited directly from business, industry, or the professions. The committee works under the guidance of a trained facilitator for two days to develop the DACUM chart. Modified small-group brainstorming techniques are used to obtain the collective expertise and consensus of the committee.

Because of their current occupational expertise, committee participants do not need any advance preparation. Almost without exception, participants on DACUM committees have found the activity to be a professionally stimulating and rewarding experience. The DACUM committee is carefully guided by the facilitator through each of the following steps:

1. Orient committee to DACUM process.
2. Review job or occupational area of concern.
3. Identify the duties (general areas of responsibility).
4. Identify the specific tasks performed in each duty area.
5. Review and refine task and duty statements.
6. Sequence task and duty statements.
7. Identify the following: (a) general knowledge and skills required, (b) the tools, equipment, supplies and materials used, (c) the worker traits and attitudes involved, and, (d) future occupational trends/concerns.
8. Other options, as desired.

The DACUM process usually results in the identification of 8-12 duties and 75-125 task statements that outline *what* a successful worker in a particular job or cluster of related jobs must be able to do. These tasks are then commonly submitted to a larger but still select group of workers and/or the immediate supervisors of such workers for verification purposes.

The tasks that are verified as **important** and **difficult to learn to perform** become the research base for developing learning guides, modules, or other units of instruction for the educational or training program. During the instructional development phase that follows the DACUM workshop, the verified tasks undergo a task analysis to determine the specific steps, performance standards, tools (equipment, materials and supplies), knowledge required, safety, attitudes, and decisions involved in performing each task.

The information resulting from the task analysis is then incorporated into modules, learning guides, or other types of instructional materials for student and teacher use.

Why DACUM?

The main reason for using DACUM has been the desire of many industrial trainers and educators to establish a relevant, up-to-date, and localized curriculum base for instructional programs. Clearly, a curriculum base that is soundly determined with maximum input from the businesses and industries that are going to employ the students prepared by secondary and postsecondary institutions is needed. To permit any school, community college or other educational agency to identify a localized research base for curriculum development, an alternative to the traditional, time-consuming, and more costly approach to occupational (job) analysis was needed. DACUM is such an alternative.

DACUM is an occupational analysis procedure that has experienced remarkable success in a relatively short period of time in the United States, Canada, the Netherlands, New Zealand, and several other countries. Because its structure and procedures allow occupational duty and task statements to be identified effectively, quickly, and at a very low cost, DACUM has become closely associated with the movement toward competency-based eduction (CBE). In addition, the DACUM process has a number of characteristics and qualities that are greatly needed in CBE if it is to become a practical alternative to traditional vocational education.

First, it is a quick process; one that can be completed in only two days once committee members have been identified. Second, DACUM is certainly inexpensive when compared to the cost of traditional occupational analyses ($1,00-$2,000 will cover the cost of most DACUM workshops). Finally, the end product of a DACUM analysis, a complete competency profile of an occupation, can be very favorably compared in validity with any other method. Given its present popularity and effectiveness, DACUM may soon become the dominant approach to occupational analysis for vocational and technical education and for business-industry training.

One additional benefit of DACUM is its public relations value to the educational institution or other agency doing the DACUM. Once employers understand the purpose and the process of DACUM, they are generally shocked to realize that a secondary or postsecondary institution really wants industry to help them identify the competencies needed by workers in their field. So many employers are familiar with the "rubber stamp" role that they are so often asked to perform on ad hoc committees (and sometimes even on occupational advisory committees) that it often takes them a while to understand that an educational institution is really serious about wanting industry to help determine *what tasks* students must be able to perform in order to be valuable future employees.

Once employers understand what is to be done via DACUM and how the results will be used, it is a rare employer who will refuse to cooperate. Instead, many schools and colleges who have used DACUM report such reactions as the following:

- Offers of equipment and supplies
- Offers of resource persons to help teach in emerging technology areas
- Requests for inservice training programs to meet local industry needs
- Increased enrollments in adult upgrading programs
- Increased support of the educational institution in a variety of ways by local business, industry, labor, and management

Although the public relations value of DACUM is secondary to its main purpose, its significant, long-term impact is too important to overlook or lightly dismiss.

When Should DACUM be Used?

Although the DACUM process has been used for several purposes, it is ideally suited for researching (1) the competencies that should be addressed in the development of new training and educational programs, (2) the competencies that should be delivered by existing training and educational programs, and (3) the relevance of existing DACUM charts.

Development of New Educational Programs

Once the need for a *new* instructional program has been established, DACUM can be used to quickly identify *what* tasks a successful worker must be able to perform on the job. Such use of the DACUM process will ensure that the new program will be relevant if the tasks (competencies) identified in the process are used as the basis for subsequent program planning and instructional development.

Review of Existing Educational Programs

A committee can be convened to identify the competencies that should be delivered in an *existing* instructional program, just as it can be convened to identify the competencies for a new a program. In this case, once the competencies have been carefully identified by industry experts, the existing educational program and instructional materials are examined to see if they address all the required tasks. Modification of the educational program are then made, where necessary, to ensure current relevance of the program.

Update of Existing DACUM charts

The third major use of the DACUM process is to review an existing occupational profile to determine if it still presents an accurate picture of the tasks performed by workers in that occupation. This type of updating may be conducted when the occupational profile is to be used for preparing job descriptions, conducting worker performance evaluations, making training needs assessments, or other non-curricular purposes. Depending on the occupational area and the amount of technological change occurring within it, it is usually necessary to conduct an update workshop session on the average of *once every 3 years*. Even then, an active advisory committee will probably need to make additional changes in between the workshops in order to maintain a curriculum that is responsive to today's business, industry, and public service needs.

Special Applications

DACUM has also been successfully used in what could be called "special applications" of the basic process. For example, in cases where qualified workers could not be released for a two-day workshop, modified DACUMs in which literature reviews were used to identify all relevant duties and tasks have been conducted with reasonable success. In these cases, one day has generally been adequate for the committee to review and accept, modify, or reject each duty and task statement derived from the literature.

DACUM has also been used successfully by the Center on Education and Training for Employment to identify the competencies required of workers when they are engaged in a specific portion of their total job. for example, vocational teachers who have been successful in implementing competency-based education have been able to identify the additional competencies needed by traditional teachers who want to convert to the CBE approach.

A similar approach has also been used to identify the additional competencies needed by vocational teachers who need to assist students in improving their basic skills and who are responsible for serving students having special exceptional needs. .

Recently the Center was asked by AT&T if we could analyze a job that doesn't exist. Believe it or not the process worked amazingly well and the company was so please that we were asked to conduct another DACUM workshop for them within a month.

Another successful adaptation of DACUM has been its use in identifying the tasks that vocational educators (specifically, teachers, counselors, and administrators) should perform in order to implement sex-fair vocational education programs.

DACUM Quality

Although the DACUM process lends itself to a number of regular and special adaptations, two critical factors are always necessary to obtain a high quality DACUM chart. The *first* is to assemble a committee of 5-12 experts in the area under study, and the *second* is to use a *trained DACUM facilitator*. Without both of these, the resulting analysis is questionable, at best.

Because of the widespread concern about DACUM being conducted in a high-quality manner that ensures valid results, a "DACUM on DACUM" was conducted at the National Center for Research in Vocational Education[1] in October, 1982 to identify the tasks required of the DACUM coordinator and facilitator. The resulting DACUM coordinator's and facilitators profile was the research base for developing the *DACUM handbook*. The handbook and the DACUM coordinator's and facilitator's profile are available from the Publications Unit of the Center on Education and Training for Employment.

A number of DACUM conventions or standards have also been established by experienced facilitators as "rules of thumb" that should always be adhered to if the process used is to be labelled a DACUM occupational analysis. The conventions are as follows:

- The facilitator is qualified through training and practical experience.
- Committee members are expert workers and/or immediate supervisors of such workers in about a 5:1 ratio.
- Committee members participate during the entire workshop.
- Task statements abide by all of the criteria for acceptable task statements.
- The same task statement appears only once.

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[1] Currently known as the Center on Education and Training for Employment, The Ohio State University, 1900 Kenny Road, Columbus, OH 43210-1090

- There are 8-12 duty areas for most occupations.
- There are six or more task statements in each duty area.
- There are 75 to 125 task statements for most jobs.

What Are the DACUM Procedural Steps?

The DACUM committee is carefully guided through each of seven procedural steps. These steps are described in the following paragraphs.

Step 1: Orientation of Committee

The goal of this step is to provide an introduction of the DACUM process and to explain to the participants the importance of their role in it. During this introduction, emphasis is placed on the rationale for employing this technique, which includes the fact that, in a very short period of time, and with low cost, DACUM can be used to identify the tasks (competencies) important to an occupation.

Step 2: Review of Occupation

The purpose of this step is to arrive at a mutually acceptable working job title(s) of the occupation to be analyzed. During this step, the related job titles and specializations to be included in the analysis are clarified. An organizational chart may also be developed to help clarify the location of the workers within their organization and their relationship to other workers.

Step 3: Identify Duties (General Areas of Responsibility)

Using the output of a general brainstorming session about the occupation as a springboard, the third step in the process involves determining the general areas of responsibility or duties of the occupation. The resulting statements reflect functional areas of responsibility under which all the specific tasks will fit. Most occupations are subdivided into from 8-12 duty areas.

Step 4: Identify Specific Tasks Performed

The fourth step involves taking each duty area and specifying the six or more tasks that are performed by workers fulfilling duties in that area. This step takes the most time, as commonly 75-125 tasks may be involved, depending on the complexity of the occupation. Each task statement begins with an action verb, includes an object which receives the action, and usually one or more qualifying words.

Step 5: Review and Refine Task and Duty Statements

After specific tasks have been identified for all areas of competence, each task and duty statement is individually reviewed. This process usually results in several changes that improves the clarity and precision of the statements.

Step 6: Sequence Task and Duty Statements

After the refinement of task statements from each area of competence, the committee organizes the tasks and duties into some logical instructional or other sequence.

Step 7: Identify Related Requirements

Either along the way or once the analysis of the occupation is competed, the committee is asked to identify the general knowledge and skills; worker behaviors (traits and attitudes) tools, equipment, supplies and materials; and future trends and concerns unique to the occupation.

Why Verify the Occupational Analysis?

After a DACUM workshop, the institution has an occupational analysis listing all of the tasks workers perform in that occupation. It was obtained from 5-12 expert workers and/or supervisors. However, the tentative task list most likely should be subjected to further verification by a larger number of experts.

"Verifying" the tasks is a process that confirms that the tasks listed are, in fact, *all* of the tasks that students will need to perform when they enter the occupation. The tasks should be submitted to people currently active in the occupation for their critical examination, and they should be asked to consider each item and determine whether that item is, or is not, actually a part of the occupation. They may also suggest additional tasks that appear to have been omitted.

In addition, other types of data, such as the *importance of the task* and *difficulty of learning to perform* the task, may be obtained readily through the verification process. Each institution has to consider the costs and benefits of verification and decide which approach will better serve its needs and desires.

The degree of sophistication and type of verification process used can vary widely. A fairly comprehensive verification study may be needed for new curricula for which little information is available.

The DACUM coordinator is usually the person who conducts the verification survey. Other persons, however, who possess the necessary data collection and analysis skills also may conduct the verification. In all likelihood, three other parties will need to be involved: (1) an administrator who can give the necessary approvals, (2) the curriculum specialists and instructors, and (3) advisory committee members. As with the identification of DACUM committee members, the latter two groups often are able to assist with the identification and selection of verifiers.

When preparing a survey or task inventory instrument, the number of questions asked must be kept to a minimum in order to ensure a better rate of response. Only information that is relevant to the institution as it proceeds to organize and develop a responsive curriculum based on the DACUM analysis should be gathered.

Verifiers should consist of a group of expert workers in the occupation and/or the immediate supervisors of workers how have direct responsibility for getting the work done. The DACUM committee should also be part of the verification group. An approach sometimes used to collect the data needed is to convene a special verification committee, solely for the purpose of reviewing the task statements. Probably the most efficient and most frequently used data collection procedure is the mailed questionnaire.

When the data have been collected and summarized, they are interpreted to determine what changes are needed in the initial task listing. These judgments should be made, probably with the help of the original DACUM committee.

Once the tasks for an occupational program are verified, an institution has a solid research base on which to build an effective vocational training program.

There is no single best way to institutionalize the use of DACUM charts. Most institutions use teams to revise their existing curricula or to develop new curricula based on the DACUM findings.

One of the major tasks undertaken next by most institutions is to conduct a *task analysis* that is, to analyze each verified task in order to identify:

1. the steps/activities involved,
2. the related knowledge (math, science, language) required,
3. the attitudes involved,
4. the performance standards expected by industry
5. the tools, equipment, supplies, and materials needed,
6. all safety concerns, and
7. the decisions the worker must make while performing the tasks.

This process, properly conducted, serves several very important purposes, one of which is to provide teachers and others with explicit and detailed information for developing curriculum. It also helps the teachers and curriculum developer(s) determine the instructional time appropriate for teaching each task (competency) and enables them to develop performance standards which are based on business and industrial criteria.

Benefits to Industry and Education

The DACUM process offers many benefits to secondary and postsecondary educators and to business and industry. It enables educators to:

- Develop new curricula for vocational education and Tech Prep
- Revise and update existing programs
- Substantatively involve business and industry in program development
- Reduce the chance of curriculum "what" errors occurring
- Develop accurate job requirement profiles for use by counselors, students, and program managers
- Identify curriculum support needs–tools, equipment, supplies, and materials
- Identify future occupational trends and concerns
- Assess the need for faculty technical upgrading
- Develop job profiles within a larger occupational cluster
- Solicit contributions of equipment, supplies, etc. based on verified need
- Set the stage for information sharing and the development of ongoing collaborative activities
- Publicize via the DACUM chart their collaborative activities with other educational agencies and industry
- Develop student performance standards based on the realistic expectations and requirements of industry
- Provide a solid basis for the integration of academic and vocational instruction

The DACUM process enables industry to:

- Develop accurate descriptions of new and emerging jobs
- Update existing job descriptions
- Evaluate employee performance on verified tasks
- Substantatively involve employees in program development
- Obtain employee commitment through involvement
- Reduce start-up time for program design and development

- Reduce the cost of program development
- Design new training programs cost-effectively
- Participate directly in the development and revision of educational programs
- Assess appropriateness of existing programs
- Develop a fair and defensible basis for test development, staff evaluations, and promotions
- Meet the job specification requirements of the Americans Disabilities Act

Among the many contributions of education to industry, one that seems to be gaining recognition is the DACUM process. The number of industrial clients all across the nation is growing rapidly as word spreads about the efficiency and effectiveness of the DACUM job analysis and curriculum development process.

The list of clients is growing all the time. "Satisfied customers" include American Welding Society, Arthur Anderson, Ashland Chemical, AT&T, Blue Cross/Blue Shield of Florida, Champion International, Control Data Corp., Defense Supply Centers, Eastman Kodak, Emery Worldwide, General Motors, General Electric, Monsanto, Motorola, Inc., Newport News Shipbuilding, Samsung, UAW-Ford, United Airlines, U.S. Government Printing Office, Virginia Power, and many others.

Reactions to DACUM Workshops

With so many positive reactions, a clear picture begins to emerge.

On saving time and money:

> "Doing this process saved many hours of course developers' time and effort. In addition, the duties and tasks were developed among the SME attendees and will build Course Development's confidence that an accurate view of what needs to be developed is now well underway. This process is highly recommended for any future project requiring a job analysis. . . . The competency profile of the CDRP administrator technician is an extremely useful document. Were it not for DACUM, which captured information on duties and tasks, the process would have taken much more time and money."

On strengths of the workshop:

> "The professionalism of the facilitators. They were objective, and truly facilitated the group's work. The DACUM developer who worked with our group was the most expert facilitator I've ever seen!"

> "The synergy of the group. None of us could have done this alone."

> "Interactions between individuals. The top-down view provided a different perspective."

"All types of people together discussing use-processes. It has rarely been done before."

"Making everyone take a different (user) view of the system as a whole."

On strengths of the process:

"Solid foundation for development; efficient–two days versus six weeks; specific versus general job specifications; employee involvement and buy-in; use of expert panel members; identification of critical tasks; opportunities for sharing ideas."

"A productive way to get information for course developers, a real learning experience for us developers."

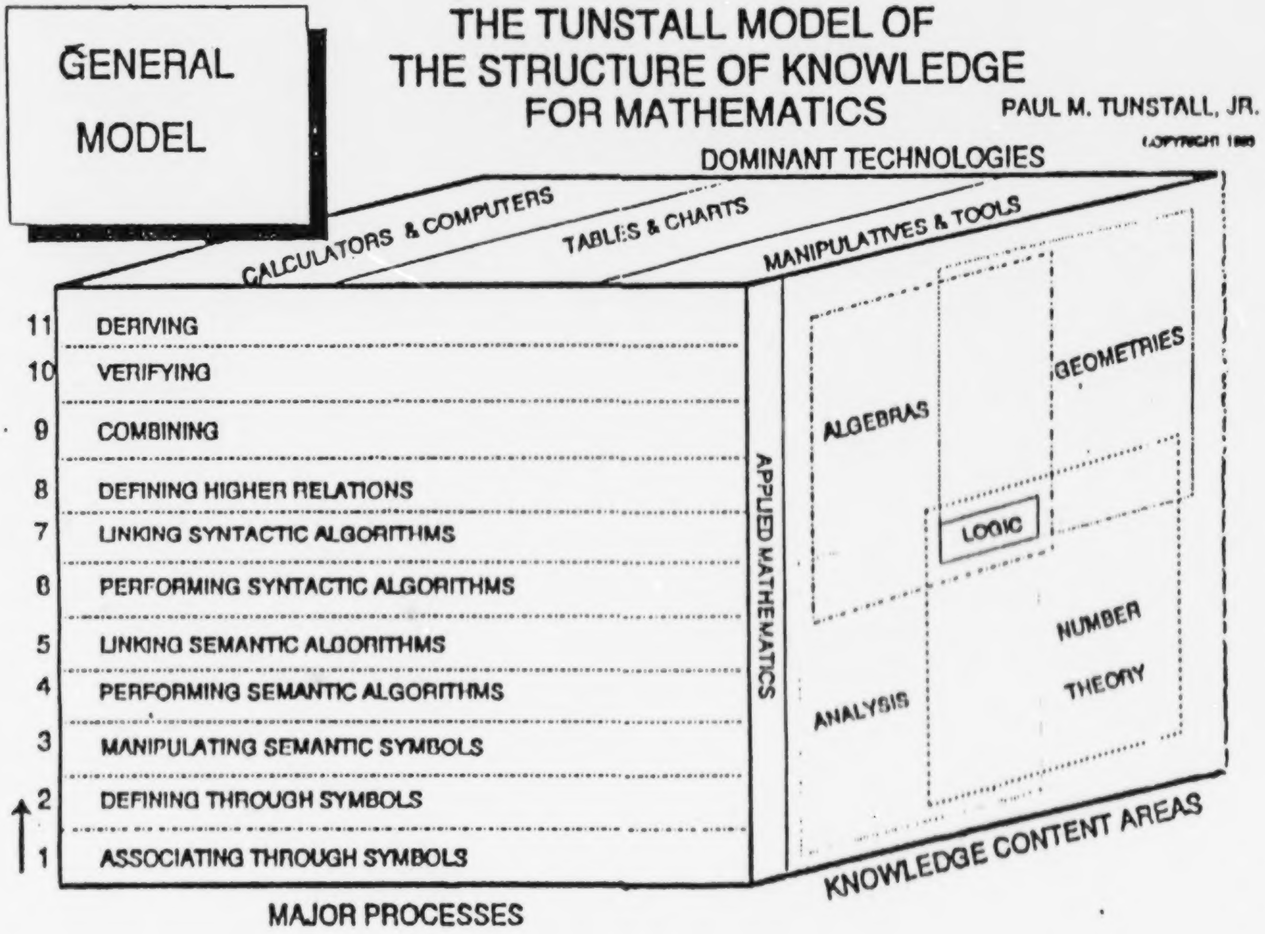
"It appears to be a powerful way of getting a large amount of information broken down into duties and tasks in a quick manner."

"It was interesting to see the structure emerge from a chaotic background."

Versatility seems to be one of DACUM's greatest strengths. No matter what the area under consideration, the process seems to yield results and gain enthusiasts. Participants at one DACUM workshop included machinists, who noted they were "able to reach consensus about important trade skills;" travel agents, who found the experience "most impressive;" police officers, who discovered an "excellent way to inform potential recruits of police duties;" paramedics, who thought it was "important to involve persons actually working in the field;" and recreation and parks workers, who thought the approach was "extremely practical."

Summary

DACUM, including the job analysis workshop, task verification, and task analysis process, has worked exceptionally well for many vocational-technical educators, curriculum developers, business and industry trainers, and others. Persons implementing Tech Prep programs are finding DACUM to be a process they can rely on to bring about effective and substantive linkages with industry and provide a solid research base for curriculum development and/or revision. Why not put it to work in your organization or institution?


GENERAL MODEL
THE TUNSTALL MODEL OF THE STRUCTURE OF KNOWLEDGE FOR MATHEMATICS
PAUL M. TUNSTALL, JR.
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DOMINANT TECHNOLOGIES
CALCULATORS & COMPUTERS
TABLES & CHARTS
MANIPULATIVES & TOOLS
11 DERIVING
10 VERIFYING
9 COMBINING
8 DEFINING HIGHER RELATIONS
7 LINKING SYNTACTIC ALGORITHMS
6 PERFORMING SYNTACTIC ALGORITHMS
5 LINKING SEMANTIC ALGORITHMS
4 PERFORMING SEMANTIC ALGORITHMS
3 MANIPULATING SEMANTIC SYMBOLS
2 DEFINING THROUGH SYMBOLS
1 ASSOCIATING THROUGH SYMBOLS
MAJOR PROCESSES
APPLIED MATHEMATICS
ALGEBRAS
GEOMETRIES
LOGIC
ANALYSIS
NUMBER THEORY
KNOWLEDGE CONTENT AREAS

Figure 1.1. The Tunstall Model of the Structure of Knowledge for Mathematics: The General Model.

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MAJOR PROCESSES

	INTERROGATIVES	PROCESSES TO USE:	DEMONSTRATIVES
11	How can we adapt and apply...	DERIVING- The invention of new processes.	Any addition to the knowledge of mathematics.
10	How can we prove...	VERIFYING- The justification or proof of a truism or lower process.	Trigonometric identities, proofs in number theory, modern algebra, geometry, calculus, etc.
9	How can we orchestrate processes in order to solve...	COMBINING PROCESSES- The linking of higher relations with lower processes that results in problem-solving procedures.	Procedures for solving word problems, equations, derivatives, & integrations, or for finding roots of polynomials, areas, etc.
8	How can we relate...	DEFINED HIGHER RELATIONS- The generalization which explains what relation rules can produce.	Any defined relation or function rules; polynomial, logarithmic, trigonometric, exponential, etc.
7	How can we combine syntactic algorithms to simplify algebraically...	LINKING SYNTACTIC ALGORITHMS- The linking of two or more syntactic algorithms by the four basic operations.	Multiple operations involving syntactic (non-semantic) expressions.
6	How can we simplify algebraically...	PERFORMING SYNTACTIC ALGORITHMS- Procedures for achieving the four basic operations using syntactic symbols in order to algebraically simplify.	Algorithms for the four basic operations (addition/subtraction/multiplication/division) involving syntactic expressions.
5	How can we combine semantic algorithms to simplify numerically...	LINKING SEMANTIC ALGORITHMS- The linking of two or more semantic algorithms by the four basic operations.	Any multiple operations with semantic expressions involving angles, non-decimal bases, sets, real numbers, exponent forms, etc
4	How can we simplify numerically...	PERFORMING SEMANTIC ALGORITHMS- Procedural process for achieving the four basic operations using semantic symbols in order to numerically simplify.	Algorithms for the four basic operations (addition/subtraction/multiplication/division) involving semantic expressions.
3	How can we clarify with semantic algorithms...	MANIPULATING SEMANTIC SYMBOLS- The process of maneuvering semantic symbols to clarify a mathematical concept or model.	Counting, ordering, place value, constructing angle bisectors, rounding, substituting for variables, regrouping, borrowing, finding set intersections, etc.
2	How can we define...	DEFINING THROUGH SYMBOLS- The generalization which explains what a symbol will produce.	The definitions and conventions for usage of all symbols & forms.
1	How can we represent...	ASSOCIATING THROUGH SYMBOLS- The use of symbols to represent real world objects, forms, units of measure, and/or models.	Recognition of the ten digits, -> as a ray, + to indicate addition, f(x) to denote a function, () for grouping, ! as a factorial, m to mean meter, etc.

THE TUNSTALL MODEL
OF
THE STRUCTURE
OF KNOWLEDGE
FOR MATHEMATICS

TECHNOLOGY
CONTENT
PROCESSES

NOTES

The functional words given in the Interrogatives and the examples presented in the demonstratives are intended to be illustrative and are NOT meant to represent an exhaustive listing.

SEE COVER PAGE FOR SELECTED DEFINITIONS.

Figure 1.2. The Tunstall Model of the Structure of Knowledge for Mathematics: The Major Processes.

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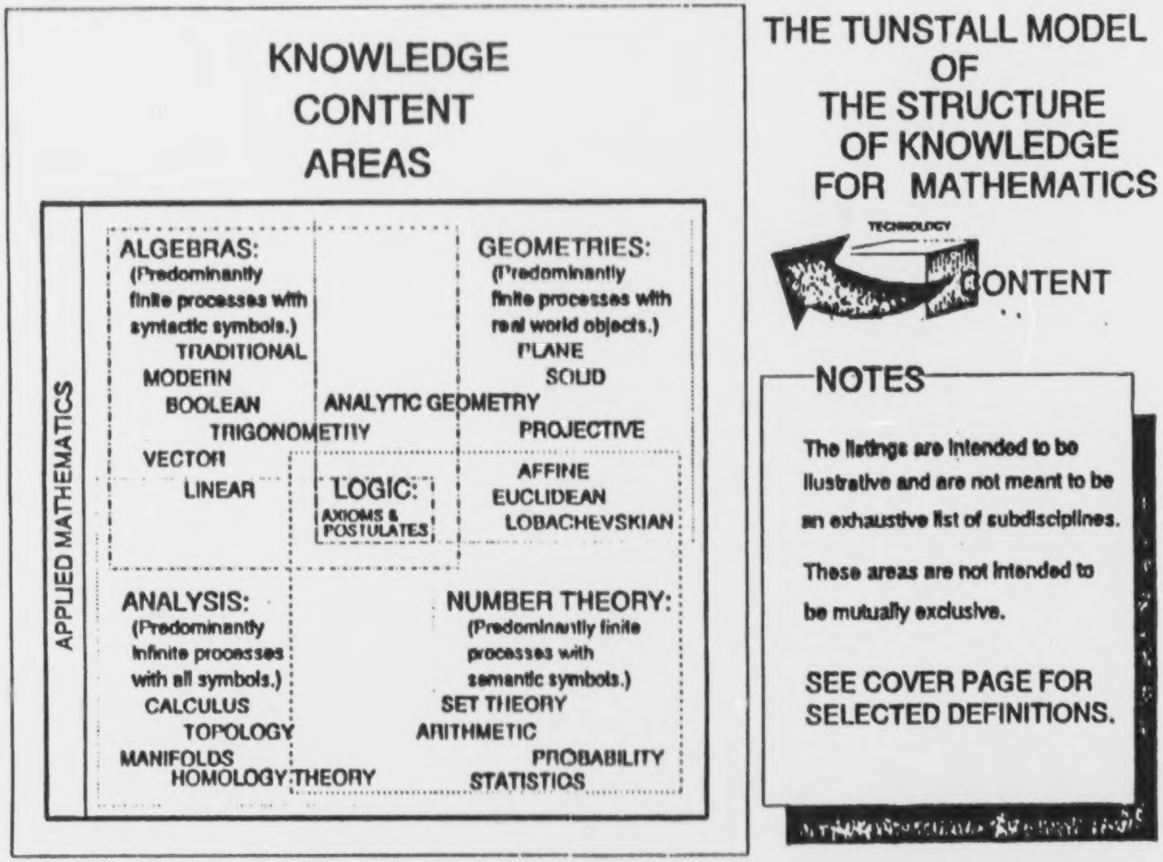
KNOWLEDGE CONTENT AREAS
APPLIED MATHEMATICS
ALGEBRAS:
(Predominantly finite processes with syntactic symbols.)
TRADITIONAL
MODERN
BOOLEAN
TRIGONOMETRY
VECTOR
LINEAR
ANALYTIC GEOMETRY
LOGIC:
AXIOMS & POSTULATES
GEOMETRIES:
(Predominantly finite processes with real world objects.)
PLANE
SOLID
PROJECTIVE
AFFINE
EUCLIDEAN
LOBACHEVSKIAN
ANALYSIS:
(Predominantly infinite processes with all symbols.)
CALCULUS
TOPOLOGY
MANIFOLDS
HOMOLOGY THEORY
NUMBER THEORY:
(Predominantly finite processes with semantic symbols.)
SET THEORY
ARITHMETIC
PROBABILITY
STATISTICS
THE TUNSTALL MODEL OF THE STRUCTURE OF KNOWLEDGE FOR MATHEMATICS
TECHNOLOGY
CONTENT
NOTES

The listings are intended to be illustrative and are not meant to be an exhaustive list of subdisciplines.

These areas are not intended to be mutually exclusive.

SEE COVER PAGE FOR SELECTED DEFINITIONS.

Figure 1.3. The Tunstall Model of the Structure of Knowledge for Mathematics: The Knowledge Content Areas.

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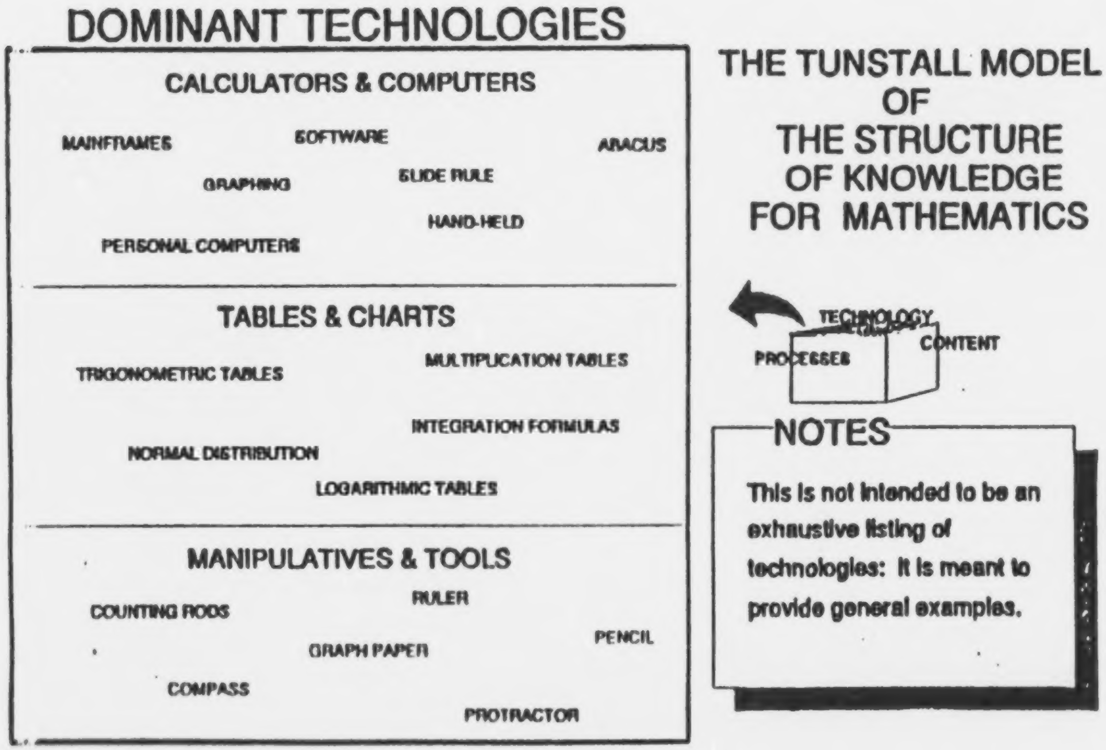
DOMINANT TECHNOLOGIES
CALCULATORS & COMPUTERS
MAINFRAMES
SOFTWARE
ABACUS
GRAPHING
SLIDE RULE
HAND-HELD
PERSONAL COMPUTERS
TABLES & CHARTS
TRIGONOMETRIC TABLES
MULTIPLICATION TABLES
INTEGRATION FORMULAS
NORMAL DISTRIBUTION
LOGARITHMIC TABLES
MANIPULATIVES & TOOLS
COUNTING RODS
RULER
PENCIL
GRAPH PAPER
COMPASS
PROTRACTOR
THE TUNSTALL MODEL OF THE STRUCTURE OF KNOWLEDGE FOR MATHEMATICS
TECHNOLOGY
PROCESSES
CONTENT
NOTES

This is not intended to be an exhaustive listing of technologies: It is meant to provide general examples.

Figure 1.4. The Tunstall Model of the Structure of Knowledge for Mathematics: The Dominant Technologies.

D-33.02-a-1

THE DETERMINATION OF THE VALIDITY, USEFULNESS, AND COMPREHENSIVENESS OF A STRUCTURE OF KNOWLEDGE FOR THE NURSING DISCIPLINE

by

CAROL BOSWELL, R.N., B.S.N., M.S.N.

A DISSERTATION

IN

HIGHER EDUCATION

Submitted to the Graduate Faculty
of Texas Tech University in
Partial Fulfillment of
the Requirements for
the Degree of

DOCTOR OF EDUCATION

Approved

Oliver D. Hensley
Chairperson of the Committee

Virginia H. Miller

Mary Ann Lubno

Accepted

Thomas A. Langford
Dean of the Graduate School

December, 1995

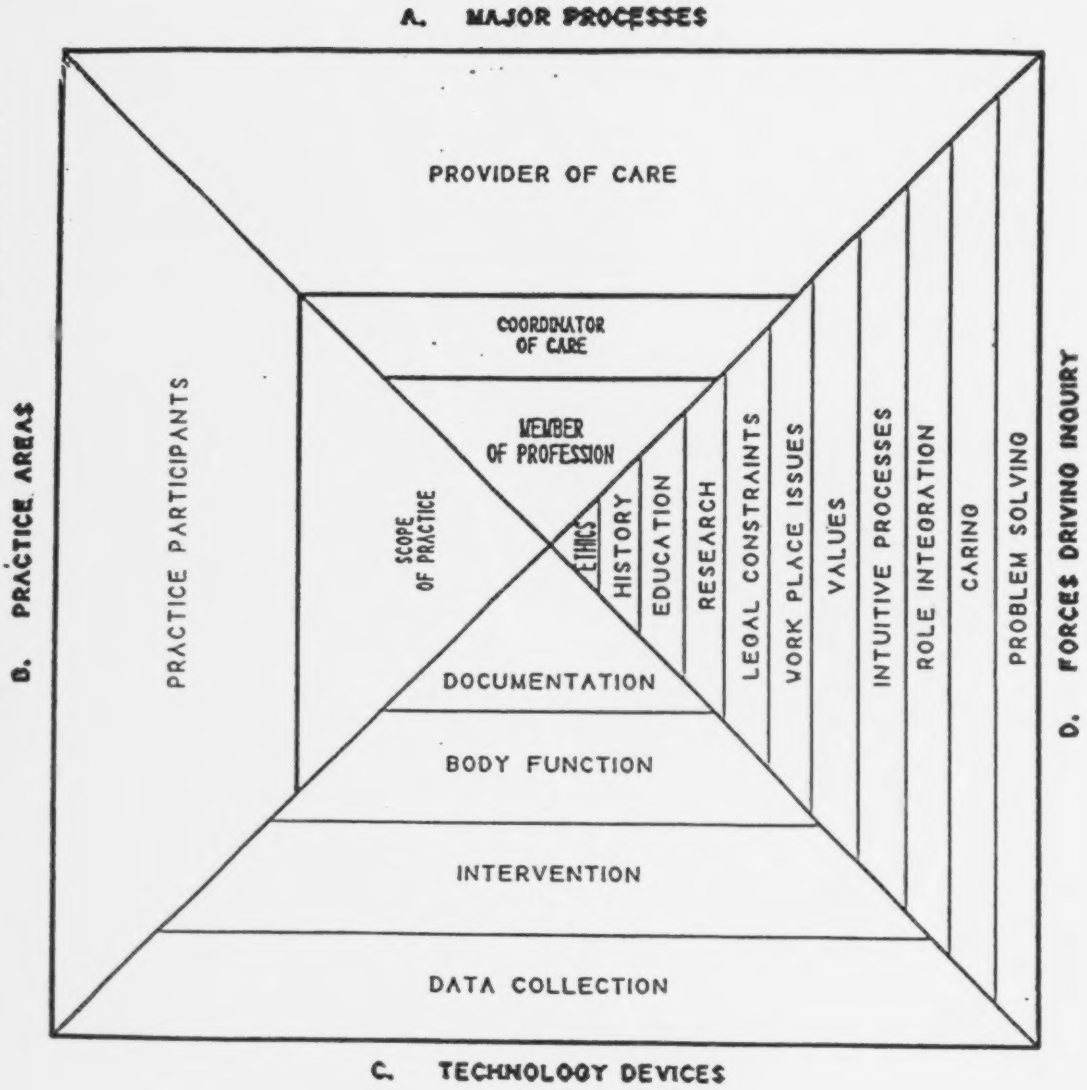
A. MAJOR PROCESSES
PROVIDER OF CARE
COORDINATOR OF CARE
MEMBER OF PROFESSION
B. PRACTICE AREAS
PRACTICE PARTICIPANTS
SCOPE OF PRACTICE
ETHICS
HISTORY
EDUCATION
RESEARCH
LEGAL CONSTRAINTS
WORK PLACE ISSUES
VALUES
INTUITIVE PROCESSES
ROLE INTEGRATION
CARING
PROBLEM SOLVING
D. FORCES DRIVING INQUIRY
DOCUMENTATION
BODY FUNCTION
INTERVENTION
DATA COLLECTION
C. TECHNOLOGY DEVICES

Figure 1.1: Boswell Model for the Structure of Knowledge for Nursing: Basic Structure

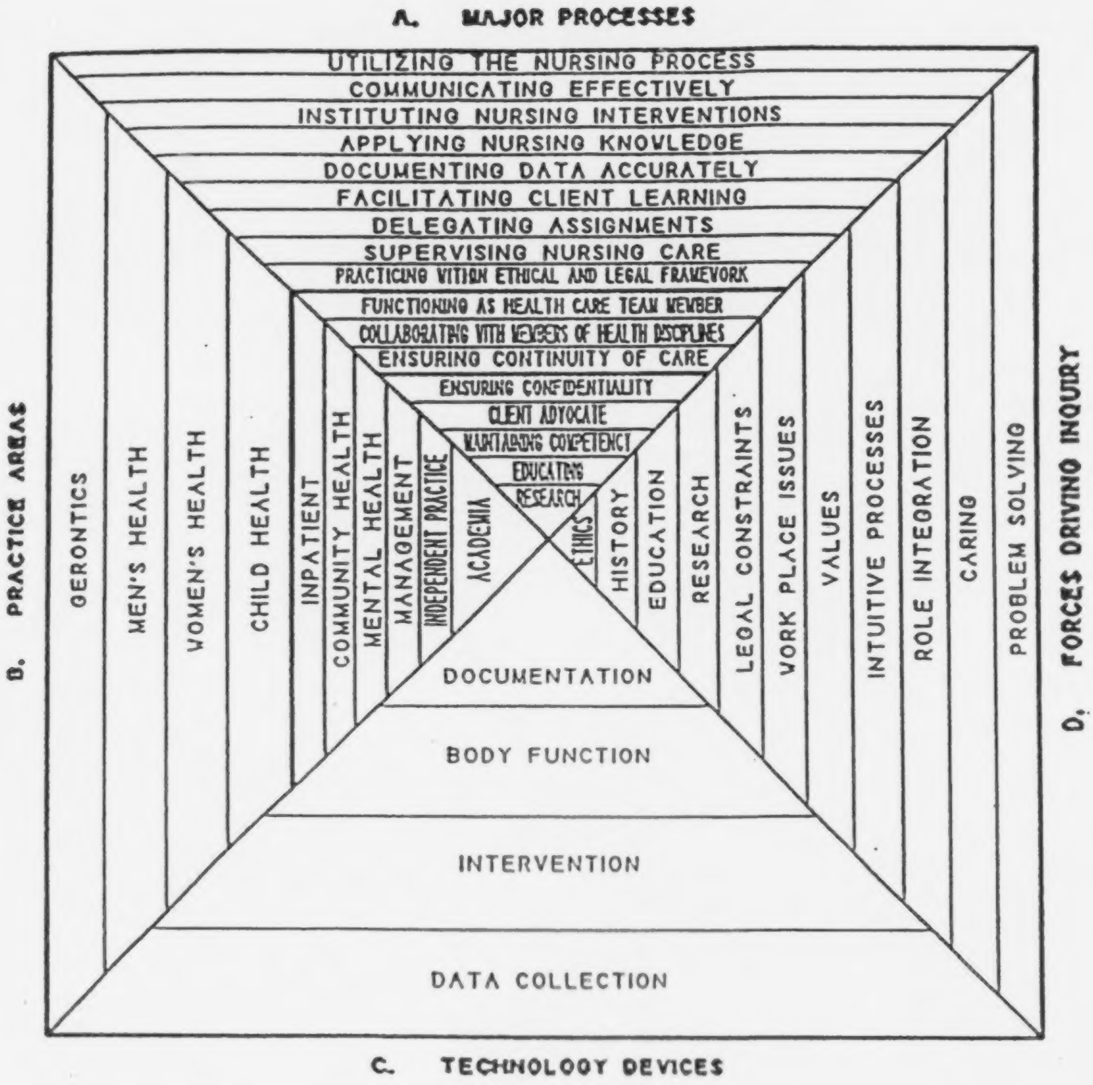
A. MAJOR PROCESSES
UTILIZING THE NURSING PROCESS
COMMUNICATING EFFECTIVELY
INSTITUTING NURSING INTERVENTIONS
APPLYING NURSING KNOWLEDGE
DOCUMENTING DATA ACCURATELY
FACILITATING CLIENT LEARNING
DELEGATING ASSIGNMENTS
SUPERVISING NURSING CARE
PRACTICING WITHIN ETHICAL AND LEGAL FRAMEWORK
FUNCTIONING AS HEALTH CARE TEAM MEMBER
COLLABORATING WITH MEMBERS OF HEALTH DISCIPLINES
ENSURING CONTINUITY OF CARE
ENSURING CONFIDENTIALITY
CLIENT ADVOCATE
MAINTAINING COMPETENCY
EDUCATING
RESEARCH
B. PRACTICE AREAS
GERONTICS
MEN'S HEALTH
WOMEN'S HEALTH
CHILD HEALTH
INPATIENT
COMMUNITY HEALTH
MENTAL HEALTH
MANAGEMENT
INDEPENDENT PRACTICE
ACADEMIA
ETHICS
HISTORY
EDUCATION
RESEARCH
LEGAL CONSTRAINTS
WORK PLACE ISSUES
VALUES
INTUITIVE PROCESSES
ROLE INTEGRATION
CARING
PROBLEM SOLVING
D. FORCES DRIVING INQUIRY
DOCUMENTATION
BODY FUNCTION
INTERVENTION
DATA COLLECTION
C. TECHNOLOGY DEVICES

Figure 1.2: Boswell Model for the Structure of Knowledge for Nursing: General Model

BEST COPY AVAILABLE

A. MAJOR PROCESSES

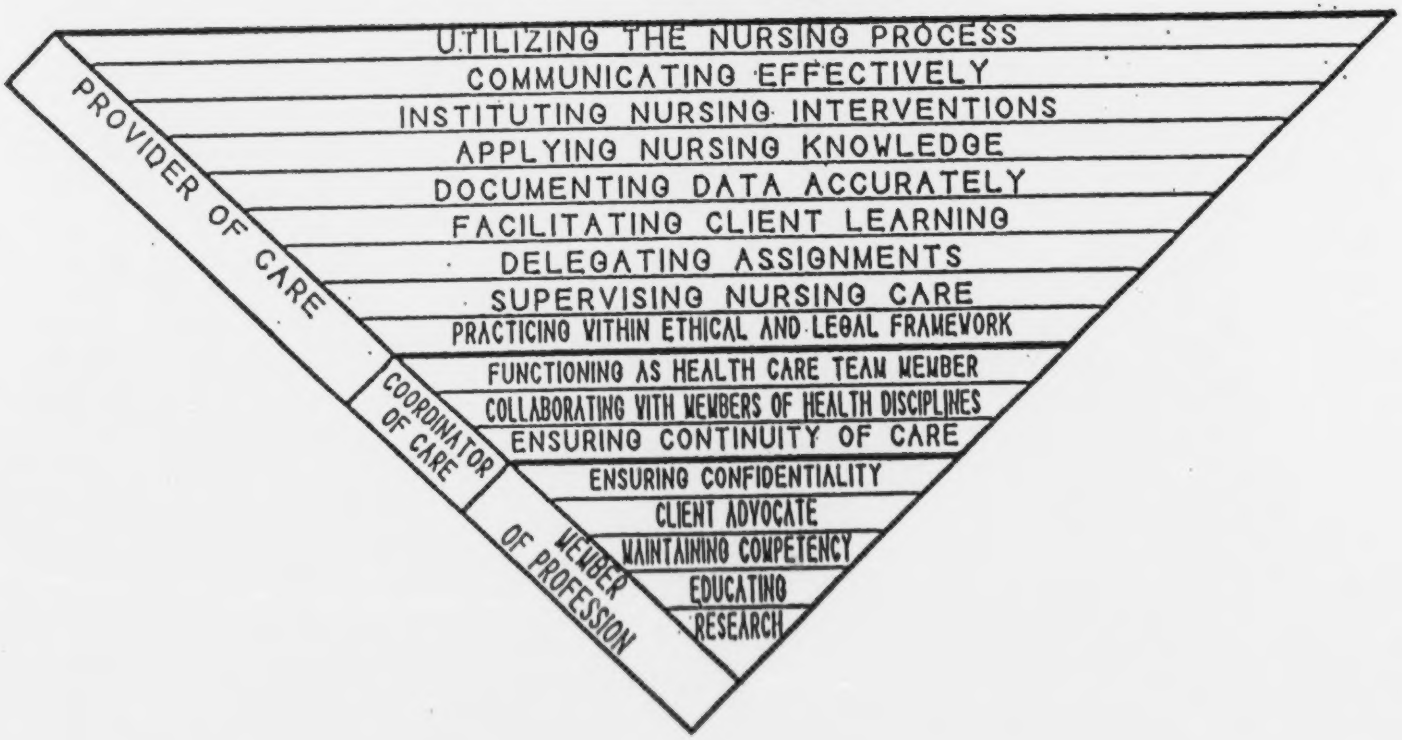
UTILIZING THE NURSING PROCESS
COMMUNICATING EFFECTIVELY
INSTITUTING NURSING INTERVENTIONS
APPLYING NURSING KNOWLEDGE
DOCUMENTING DATA ACCURATELY
FACILITATING CLIENT LEARNING
DELEGATING ASSIGNMENTS
SUPERVISING NURSING CARE
PRACTICING WITHIN ETHICAL AND LEGAL FRAMEWORK
FUNCTIONING AS HEALTH CARE TEAM MEMBER
COLLABORATING WITH MEMBERS OF HEALTH DISCIPLINES
ENSURING CONTINUITY OF CARE
ENSURING CONFIDENTIALITY
CLIENT ADVOCATE
MAINTAINING COMPETENCY
EDUCATING
RESEARCH
PROVIDER OF CARE
COORDINATOR OF CARE
MEMBER OF PROFESSION

Figure 1.3: Boswell Model for the Structure of Knowledge for Nursing: General Structure of Major Processes

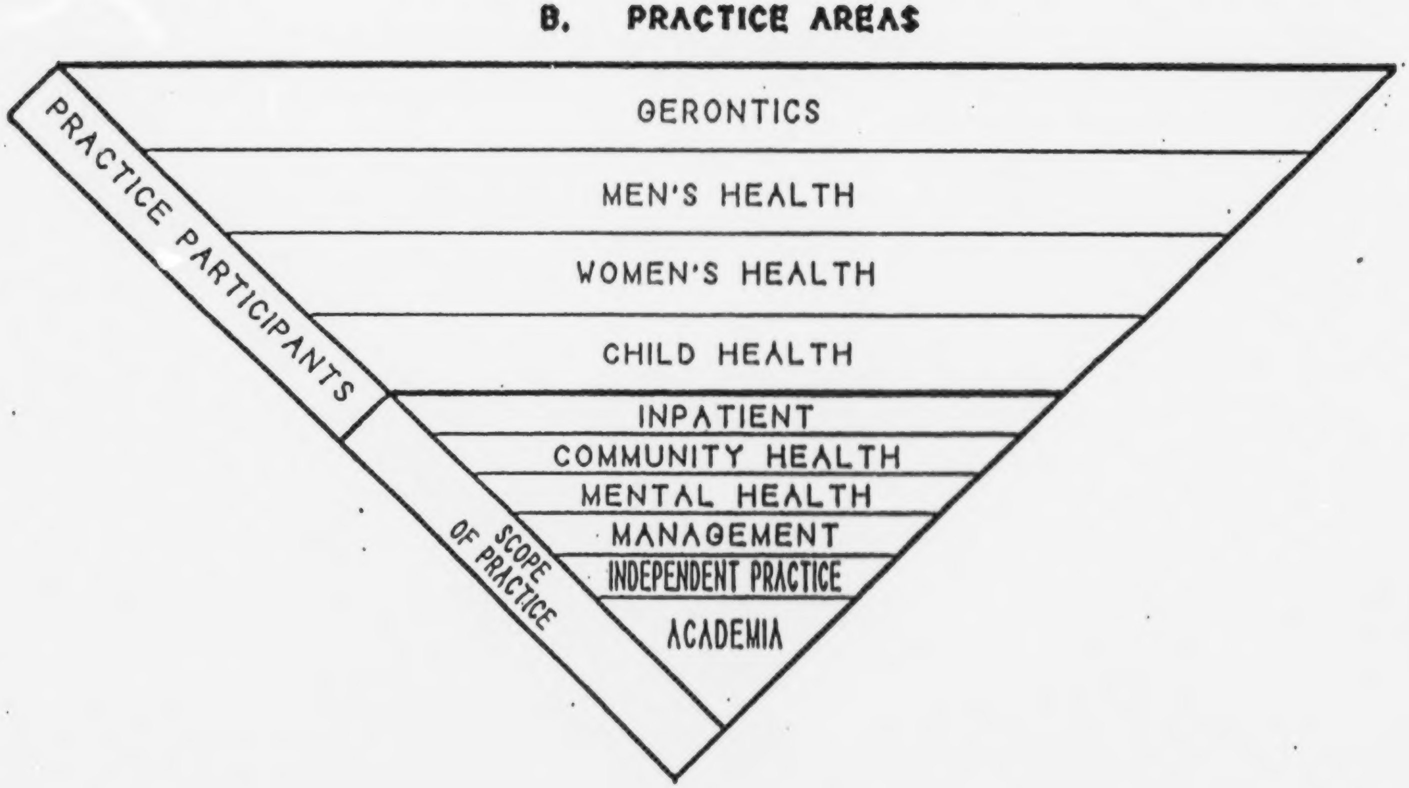
B. PRACTICE AREAS
GERONTICS
MEN'S HEALTH
WOMEN'S HEALTH
CHILD HEALTH
INPATIENT
COMMUNITY HEALTH
MENTAL HEALTH
MANAGEMENT
INDEPENDENT PRACTICE
ACADEMIA
PRACTICE PARTICIPANTS
SCOPE OF PRACTICE

Figure 1.5: Boswell Model for the Structure of Knowledge for Nursing: General Structure of Practice Areas

MATHEMATICAL KNOWLEDGE REGISTERS FOR TECH PREP

Introduction

Briefly, I will sketch an early step and, I believe, an essential step in defining what basic elements of mathematical knowledge are required for any scientific program including Tech Prep. I will use extracts from the Calculus Register as an example. These extracts are the Major Model, the cluster for Limits, and parts of the structured list of *basic knowledge elements*.

Various committees, groups, and organizations of teaching and research professionals in the mathematical world have drafted definitions of mathematical reform programs at various educational levels. Each of these definitions have a built-in *flexibility*. This flexibility has been necessary as no one has defined and validated exactly what knowledge our students require in order to contribute to the needs of our *technological village*. If we follow the expert systems approach (Harmon, Mause, and Morrissey 1988) then we see that to get a single standard we must reach a consensus rather than a compromise. If we know what we are doing then we must give our students the exact set of problem-solving techniques that will enable them to go out into the world and solve problems.

To validate the calculus register, I propose to survey the research mathematicians around the globe about what constitutes the complete register of *basic knowledge elements* for calculus. Dictionaries are validated by committees of experts in word usage. In the same way, mathematics registers are validated by mathematical experts. Tunstall (1993) has provided the validated framework for all of mathematics; I am continuing with Calculus. Others will construct mathematics registers of knowledge for the other areas. Will you be one of them?

Register Usage

There are 178 *basic knowledge elements* in the Calculus Register. A few are listed as illustrations on the last page of the appendix. The calculus course sequence is generally a 9 to 12 semester hour affair. So, mathematics courses of 3 semester hours will probably have 45 to 60 *basic knowledge elements* in their registers. In either case, the timely and efficient location of a single knowledge element among such a large number requires a register structured for a practitioner's use. I call this structure the *telelogical structure* (Sisler 1994). The majority of the *basic knowledge elements* are modeled pictorially for even better understanding of the list structure. The pictorial model adds to the efficiency of the practitioner's retrieval of the *basic knowledge elements*. I have included in the first page of the appendix as an example of a pictorial model the Major Model of *basic knowledge elements* for Calculus.

Suppose, as an illustration of usage of the register, we wish to locate a certain knowledge element in the cluster concerning *limits*. You will see in the Major Model that *limits* are found in cluster number 2. At this point one can go to the model for cluster number 2 to narrow the search for the solution to the particular problem. If we are not sure which element to choose next we may proceed to the list and look at the text for the 8 elements in this cluster. After studying the general idea of each knowledge element we may decide to look more closely at *Indeterminate Limits*, element 2.2. This Basic Knowledge Element is further divided into 3 more Basic Knowledge Element and so it is a cluster in its own right. If the problem after studying 2.2 is still not solved we may search deeper and read the *main idea* entry for each of the 3 refinements: Infinite Limits (2.2.1), Limits at Infinity (2.2.2), and Ambiguous Limits (2.2.3). After reading the *main ideas* for each one we may decide that 2.2.3 will solve our problem. Finally, a study of

2.2.3 will give us the answer we have been seeking. This is the primary purpose of the register—an efficient reference for the practitioner or student.

There are several auxiliary uses of the mathematics register, also. Since the validated register will be the standard it will form the basis for articulation in the transfer of student credits more precisely than the course level (Hensley and Fedler 1992). Transcripts or other student records will show student performance on each of the *basic knowledge element* in the course. With such records those who evaluate the transferring students will know exactly which elements need yet be mastered and whether to study the particular elements or to begin a full course. A fully expanded register will contain the history, validity level, difficulty, and average time to mastery of each *basic knowledge element*. Also, there will be a link to prerequisite and related knowledge elements. Too, the register will have to be updated on a scheduled or per need basis.

The Calculus Register, in particular, will help in curriculum development in mathematics. In the first place, it will be an archetype for other mathematics registers. Second, it will provide a solid foundation for determining many of the *basic knowledge elements* needed in registers of courses preceeding calculus. Third, the Calculus Register will also form a foundation for the construction of courses following calculus.

The Calculus Register will have a variety of uses not anticipated at the outset just as the dictionary has uses other than originally intended by its creators. The dictionary was originally intended as a reference for word meaning, spelling, and usage. The dictionary may now include pronunciation, history, pictures, synonyms, antonyms, tables, and philological essays. (Morris 1970) Dictionaries are not often cited but usually taken for granted when used in written articles, but they are indispensable. In the same manner, mathematics registers will be indispensable to those working in mathematics.

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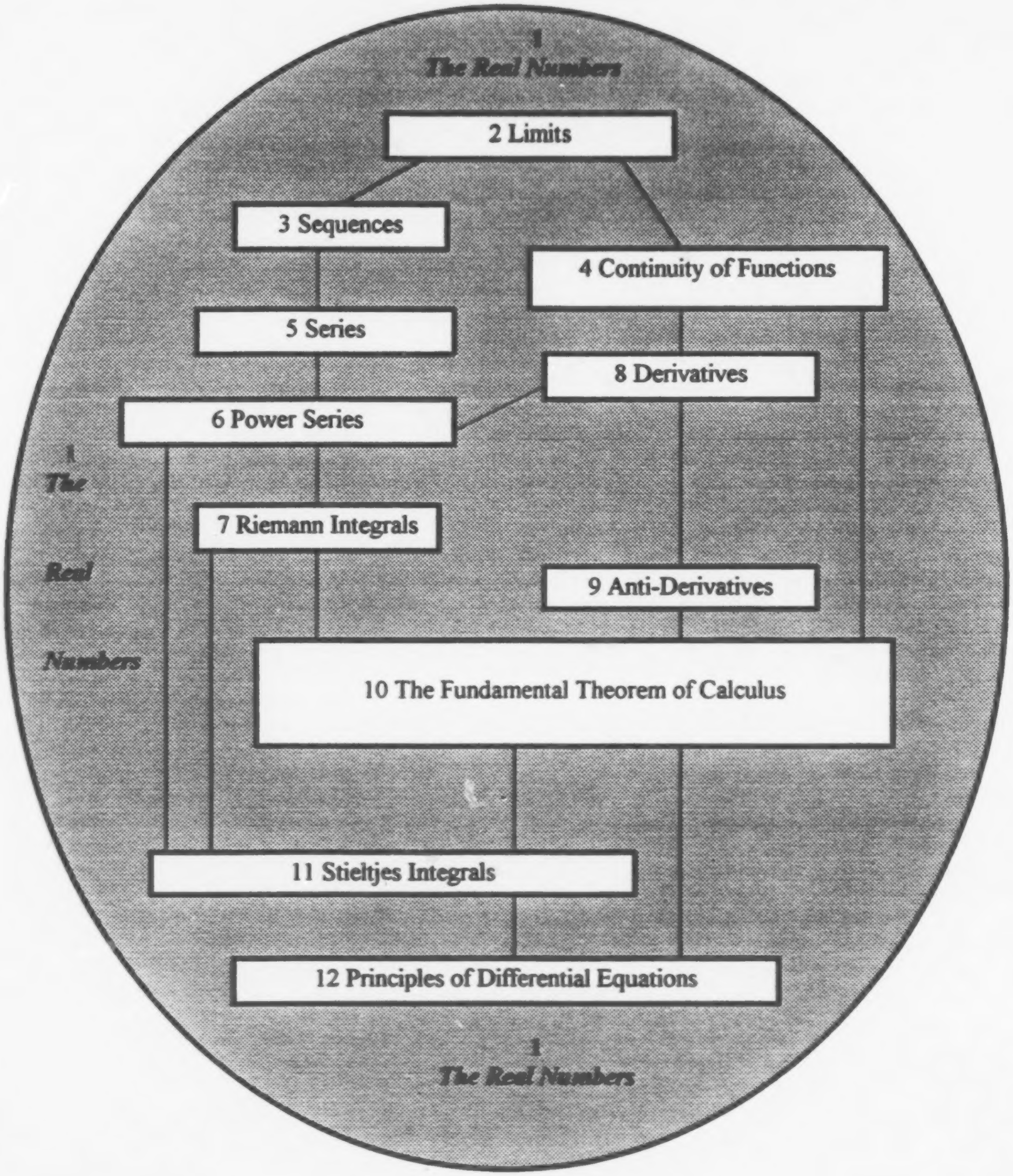
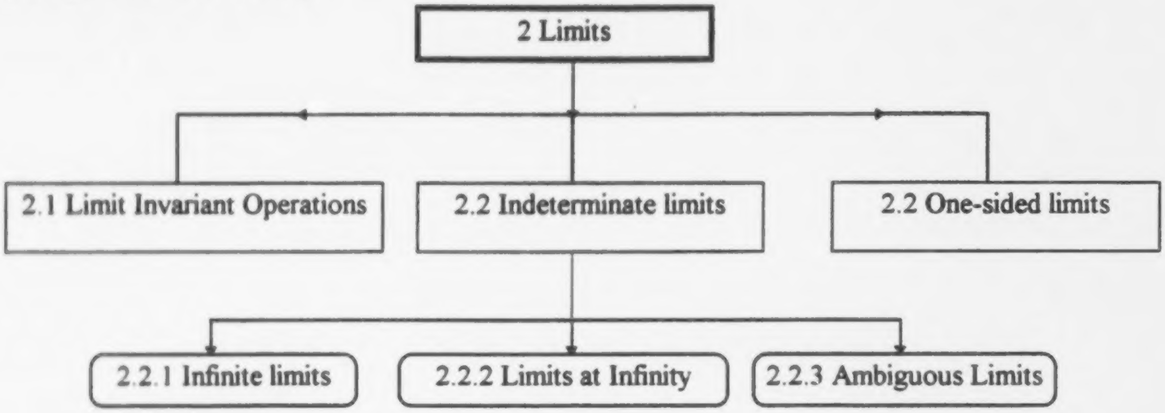
The Major Model Of Basic Knowledge Elements For Calculus


1
The Real Numbers
2 Limits
3 Sequences
4 Continuity of Functions
5 Series
8 Derivatives
6 Power Series
1
The
Real
Numbers
7 Riemann Integrals
9 Anti-Derivatives
10 The Fundamental Theorem of Calculus
11 Stieltjes Integrals
12 Principles of Differential Equations
1
The Real Numbers

2 The Sub-model for Limits


2 Limits
2.1 Limit Invariant Operations
2.2 Indeterminate limits
2.2 One-sided limits
2.2.1 Infinite limits
2.2.2 Limits at Infinity
2.2.3 Ambiguous Limits

Outline of the List of Knowledge Elements in Calculus Register

1 Real Numbers
  1.1 Axiom of Continuity
    1.1.1 Density of Rationals
      1.1.1.1 Dedekind Cuts
    1.1.2 Least Upper Bound Property
      1.1.2.1 Order Completeness
    1.1.3 Surreal Numbers
      1.1.3.1 Infinitesimals
2 Limits
  2.1 Limit Invariant Operations
  2.2 Indeterminate Limits
    2.2.1 Infinite Limits
    2.2.2 Limits at Infinity
    2.2.3 Ambiguous Limits
  2.3 One-sided Limits
3 Sequences
4 Continuity of Functions
5 Series
6 Power Expansion of Functions
7 Riemann Integrals
8 Derivatives
9 Antiderivatives
10 The Fundamental Theorem of Calculus
11 Stieltjes Integrals
12 Principles of Differential Equations

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Nursing Education Advisory Committee (NEAC) Report

Volume I

"Essential Competencies of Texas Graduates of Education Programs In Nursing"

March, 1993

Published by

Board of Nurse Examiners
For the State of Texas

Board of Vocational Nurse Examiners

ACKNOWLEDGEMENTS

The Board of Vocational Nurse Examiners and the Board of Nurse Examiners for the State of Texas wish to acknowledge Mary Jane Ashe for coordinating the committee activities of the Nursing Education Advisory Committee (NEAC). The members of NEAC represented nursing education, service, professional associations and state agencies. Those who served on NEAC subcommittees to develop the "Essential Competencies of Texas Graduates of Education Programs in Nursing" and the "Manpower Issues and Trends Report" demonstrated their dedication to improving nursing availability and quality in Texas by committing their time and expertise over the two year period of the committee's life.

The boards also acknowledge the benchmark work of the American Association of Colleges of Nursing who published Essentials of College and University Education for Professional Nursing: Report to the Membership of AACN in October, 1986. The competencies and format developed by AACN were used as the primary structure for the "Essential Competencies of Texas Graduates of Education Programs in Nursing." Further, the staff of the Colorado Board of Nursing provided consultative support. A major reference for the development of the essential competencies in Texas was The Colorado Articulation Model, published by the Colorado Council on Nursing Education in 1990.

The staff of Joint Venture of the University of Texas Medical Branch in Galveston is gratefully acknowledged for their production of the many support papers and the Manpower Issues and Trends Report.

A special thanks goes to Marcia Collins and Art Cates of the Health Professions Resource Center, Bureau of State Health Data and Policy Analysis of the Texas Department of Health for their efforts in creating the clear and concise charts and tables which illustrate nursing manpower distribution on Texas.

Texas League of Vocational Nurses is acknowledged for printing Volumes I & III of the Nursing Education Advisory Committee (NEAC) Report.

Material in this report is not copyrighted and may be reproduced. The Board of Vocational Nurse Examiners and the Board of Nurse Examiners for the State of Texas would appreciate credit for material used and a copy of the reprint. *Direct questions or comments about this report to Mary Anne Hanley, MA, RN, at (512)835-8650 or Joy Fleming, MSN, RN, at (512)835-2071.*

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BACKGROUND

In the Fall, 1990, the Board of Nurse Examiners (BNE) and the Board of Vocational Nurse Examiners (BVNE) for the State of Texas in cooperation with the Texas Higher Education Coordinating Board appointed and convened the Nursing Education Advisory Committee (NEAC) and its four subcommittees: LVN, Diploma/ADN, BSN, and Manpower. The charges to the manpower subcommittee were:

1.) Identify trends in nursing practice and major forces in society which will dictate the future competencies needed by nurses, and

2.) Examine short term and long term nursing education and nursing manpower needs in Texas.

This report is respectfully submitted in fulfillment of these charges.

In preparing this report the Committee used, on a limited scale, a number of the techniques used in formal, ongoing trend tracking programs:

- general and targeted searches of current literature and published resource documents were conducted;
- input was sought from health care industry and nursing practice groups, using survey and interview processes;
- nursing association/organization positions on selected trends were identified;
- data sets were identified and templates prepared;
- a list of trends was prepared from those appearing in the literature and key trends were selected for inclusion in the report based upon the potential impact of the trend on the regulatory activity of the RN and LVN licensing Boards;
- committee members, representing knowledgeable nurses from multiple settings, served as an "expert panel" to determine salient trends, implications, and relevant issues.

Nurse manpower status and trend information contained in this report were derived from existing data bases and reports. The BVNE and BNE staffs collaborated with the Health Professions Resource Center, Bureau of State Health Data and Policy Analysis, Texas Department of Health to synthesize and configure existing data to address specific questions relative to nursing education, manpower supply and utilization, and manpower requirements questions specific to Texas.

The extent to which the Committee focused on each trend selected for examination and the proportional space devoted to selected trends reflects the committee's perception of potential impact on regulatory activity of the Boards. In addition, the extent to which the information was readily available influenced trend selection and description. Trends perceived to have high impact were given extensive consideration. For example, differentiated practice is a major national trend that has not been comprehensively examined in Texas. Therefore, a detailed description of differentiated practice and its implication are included in this report. In contrast, the role of advanced nurse practitioners also is a significant trend. However, this issue is being addressed in forums on an on-going basis. Therefore, this trend is briefly summarized for purposes of this report.

Finally, the NEAC Manpower Committee used the trend information to: 1) formulate key issues relevant to the roles and missions of the BVNE and BNE and 2) identify competencies it projected would be required for nurses to function effectively in evolving nursing roles. These issues and competencies are presented to assist the Boards and their advisory groups in future deliberations.

EXECUTIVE SUMMARY: REPORTS OF THE COMPETENCIES SUBCOMMITTEES AND THE FORMAT IMPLEMENTATION TEAM

HISTORICAL BACKGROUND OF THE CREATION OF THE NURSING EDUCATION ADVISORY COMMITTEE

During the mid 1980s Texas began to recover from a severe economic recession brought about by a world wide oil crisis and an unanticipated collapse of the State's real estate market. In some parts of the State unemployment was as high as thirty percent. Concurrently, Texas hospitals were in an unprecedented crisis as they desperately scrambled to: prepare for the implementation of the federal government's sweeping reform of health care financing - Medicare's Prospective Payment System and Diagnostic Related Groupings (DRGs); meet the increased demands for professional nurses caused by the rapid rise of in-patient acuity; and remain in the forefront of rapid advancements in medical technology. These dramatic events necessitated the rethinking of traditional approaches to health care planning, delivery and education.

In 1988, responding to statewide concerns about funding of education for the health professions, the Texas Legislature appointed the Special Committee on Post-Secondary Medical, Dental, and Allied Health Education. The Special Committee identified strategic planning as a critical need in nursing education and determining nursing manpower needs for the state. Public testimony on the nursing shortage, complaints about long waiting lists to enroll in vocational and professional nursing programs, and barriers to transition from one level of nursing education to the next, prompted the 71st Texas Legislature to mandate through House Concurrent Resolution 92, that the Texas Higher Education Coordinating Board convene a Nursing Study Committee. This committee was charged specifically with conducting a comprehensive study of nursing education issues and concerns related to the nursing shortage, career (educational) mobility among nursing programs and collaboration among schools in geographic proximity.

The Nursing Study Committee's report, Texas Nursing Crisis: The Higher Education Response (1989), employed a multifaceted approach in identifying categorical problems in nursing education and manpower by addressing specific recommendations to the Legislature, the Coordinating Board, colleges and universities, as well as to the Board of Nurse Examiners (BNE) and the Board of Vocational Nurse Examiners (BVNE). The report cited the following recommendations to the BNE and BVNE:

"That the Board of Nurse Examiners and the Board of Vocational Nurse Examiners should:

* Adopt essential competencies to be required of graduates from each types of entry-level nursing program;

* in cooperation with the Coordinating Board, immediately appoint a Joint Curriculum Advisory Committee to recommend essential competencies to be required of graduates from each type of entry-level nursing program;

* The committee should include representatives from the Board of Nurse Examiners, the Board of Vocational Nurse Examiners, the Coordinating Board, the Texas Education Agency, nurse educators from each educational level and health care agencies;

* define successive levels of nursing by the general education and nursing competencies required, with each level building on the preceding level;

* establish a procedure for the periodic review of these competencies as they relate to current nursing practice;

* adopt and implement these essential competencies as part of program accreditation requirements;

* develop recommendations for using the essential competencies as the basis for transferring nursing course credits among programs;

* define reasonable procedures for assessing prior learning and work experience;

* recommend that all institutions offering LVN programs must provide an option that offers general education courses which will meet transfer requirements without unnecessarily increasing the length of the program;

* collect standardized licensure data (including demographic, educational, and employment characteristics of registered nurses and licensed vocational nurses in Texas) using quality control procedures;

* update biannually and disseminate Nursing Programs in Texas, a fact book on nursing programs developed in prototype form by the Nursing Study Committee, as a tool for recruiting and advising."

After receiving the report in June 1990, the BNE and the BVNE in cooperation with the Higher Education Coordinating Board, created the sixteen member Nursing Education Advisory Committee (NEAC), charged with pursuing these recommendations commencing in the fall of 1990. Co-chaired by a board member from the BNE and the BVNE, NEAC met over a two year period. The committee was released from its charge after presenting its recommendations to the respective Boards in Spring of 1993.

NEAC COMPOSITION, SELECTION AND CHARGES

Although the original intent of the Boards was to have a small committee, it quickly became apparent that a committee of sixteen could never represent all of the groups that needed voices in the nursing education and manpower planning for Texas. In order to address the need for diverse representation on the committee, a staff proposal to increase the size of NEAC to include five subcommittees (four nursing education competencies subcommittees and a manpower subcommittee), along with organizational strategies for management and communications were presented to and accepted by the Boards. The committee decision-making remained with the original membership of sixteen, identified as the CORE Committee. Since the Chairpersons of the subcommittees were CORE members, their voices represented the consensual decisions of the subcommittees.

Primary considerations in the committee member selection process were representation and diversity from: education - vocational, diploma, associate degree and baccalaureate level nursing programs from public and private universities and colleges, community/junior colleges, hospital based and proprietary type programs; nursing practice settings - urban, rural acute care, long term care, ambulatory care and community based care; nursing and health care associations and health related state agencies; and health care consumers. Further considerations in the committee member selection process included diversity in geographic location, experience, education, ethnicity, and nursing philosophy.

Selections to the committee from the education and practice arenas were major undertakings given that Texas had 74 entry level professional nursing programs with 33 extended campuses, 107 vocational nursing programs, and registered nurses and licensed vocational nurses in total, numbering well over 200,000. Additional ex officio and resource members were included on the CORE and Subcommittees who brought expertise from state agencies involved in state health planning and other related matters.

Support was provided to the CORE Committee and Subcommittees by professional staff of the BNE, BVNE, Coordinating Board and the Texas Education Agency. A complete listing of the membership, with the organizations and groups represented, as well as executive summaries of the subcommittees' reports are contained in all three volumes of the NEAC Report.

THE COMPOSITION AND CHARGES OF THE COMPETENCIES SUBCOMMITTEES

The charges to the four education subcommittees were:

CHARGE 1: IDENTIFY PROPOSED NURSING COMPETENCIES TO BE REQUIRED OF GRADUATES FROM EACH TYPE OF NURSING PROGRAM.

Objectives:

1. Define successive levels of nursing competencies with each level building on the preceding level.

2. Develop recommendations to the BNE and BVNE as to how these essential competencies can be part of program accreditation requirements.

3. Establish a procedure for the periodic review of these essential competencies as they relate to current nursing practice.

4. Develop recommendations as to how essential competencies can be identified as the basis for awarding transfer credit for nursing courses.

5. Define reasonable procedures for assessing prior learning and work experience.

6. Review the policies of institutions offering LVN programs and develop recommendations as to how LVN programs can provide an option that offers general education courses which meet transfer requirements without necessarily increasing the length of the program.

The number of education subcommittees was reduced to three when the diploma and associate degree nursing subcommittees agreed to merge to produce one set of competencies, since the roles of the diploma and associate degree nurse were viewed as very similar. The three education subcommittee chairs were faculty or directors for that level of education e.g., a BSN program educator chaired the BSN Competencies Subcommittee. In addition each subcommittee was served by representatives from each of the four levels of nursing education, as well as nursing practice and state agency representatives.

DEFINING THE ENTRY-LEVEL COMPETENCIES

The VN, DIP/ADN and BSN Competencies Subcommittees sifted through a plethora of competency and articulation models and related resource materials developed by a variety of state boards of nursing and nursing associations. The previous work of a number of invaluable resource groups were consulted and discussed by the subcommittees including: the nursing articulation models of Colorado, Kansas, Iowa, and Idaho; the South Dakota Statewide Project for Nursing and Nursing Education; National Council of State Boards of Nursing, Inc.'s job analysis for the newly licensed registered and vocational nurses; the National Commission on Nursing Implementation Project: Models for the Future of Nursing; the Midwest Alliance in Nursing's project on competency development; and National League for Nursing's entry level educational outcomes for practical, associate degree, diploma and baccalaureate nurses. In reviewing so many diverse materials the Education Subcommittees had to remain focused on their mission which was to describe "present" educational outcomes and that these outcomes were not predictive of future needs. This was an important distinction from the task of the Manpower Subcommittee, whose mission was to describe current trends that would predict future needs.

The Subcommittees agreed to adopt the format created by the American Association of Colleges of Nursing (AACN) for its competency statements in Essentials of College and University Education for Professional Nursing. The competencies are grouped by the three major nursing roles: provider of care, coordinator of care, and member of the profession of nursing. Broad competency statements describe the expected behaviors of the student at the time of graduation. The competencies are further delineated in terms of the knowledge, clinical behaviors and judgements needed to accomplish each competency.

The AACN format includes a listing of the related nursing interventions/skills for each level of nursing education. However, Subcommittee members expressed great concern over publishing "lists of skills", for two reasons: 1) concern that the use of skills or tasks would be used to define the nursing roles rather than the board competencies in the work setting, and 2) concern that the skills lists would be too prescriptive if adopted in curriculum rules promulgated by the boards. The CORE Committee concurred that the skills lists should be deleted from the competencies. It was identified that programs would provide adequate opportunities for "skills" acquisition if experiences in relation to "clinical judgments" are provided. The CORE Committee further recommended that the boards establish mechanisms to ensure periodic review of the competencies for relevance and validity.

THE REPORT OF THE FORMAT IMPLEMENTATION TEAM

The Format Implementation Team (FIT) was formed during the first year of NEAC's work. Its functions included addressing formulation of recommendations to the CORE for the use and implementation of the competencies as well as other integrative functions to support the committee. FIT members included CORE education and practice representatives, BNE and BVNE staff support and a NEAC Co-Chair. FIT reviewed rules and regulations, position statements, and accreditation standards of state agencies, national nursing organizations and regional educational associations that could impact NEAC education articulation recommendations to the Boards. FIT developed recommendations for implementing the essential competencies, which were approved by the CORE Committee and presented to the Boards. The recommendations submitted to the BNE and BVNE which included implications for long range planning and analysis were:

1. The BNE and BVNE establish rules that would require schools to demonstrate achievement of the approved competencies according to the following recommended time frame:
    a. Presentation of competencies to both Boards in 1993.
    b. Boards will establish mechanisms for development of rules; rules are published for public comment and revised by Boards as needed.
    c. Rule development planned for 1994, implemented in 1995 with final implementation by all schools by 1997.
2. Student placement in a nursing program or mobility option will be based on the assessment of prior education and experience in relation to the approved competencies.
3. Programs will provide teaching/learning experiences which do not require repetition of content and experiences validated by the competencies.
4. The BNE and BVNE will make available to Texas nursing programs information regarding models for educational mobility options and articulation agreements.

POSTSCRIPT TO THE REPORT

The BNE and BVNE received and accepted the NEAC recommendations in the Spring of 1993. During May 1993, drafts of the NEAC essential competencies were sent to all nursing programs in Texas along with a survey instrument requesting comments on the validity of the competencies and the feasibility of incorporating the competencies in curricula. BNE and BVNE staff have completed a joint analysis of the survey results. The findings reveal the validation of the competencies and with only minor revisions needed for incorporation in curricula. (Please note that those revisions are not included in this report). A pilot study to evaluate the competencies in selected Texas nursing programs is targeted for the 1994 school year. In 1994 board staff plan to prepare curriculum rule revisions for Board consideration in 1995 following the completion of the pilot program.

ESSENTIAL COMPETENCIES OF TEXAS GRADUATES
OF
EDUCATION PROGRAMS IN NURSING (1992)

INTRODUCTION

In Texas, nursing practice flows along a continuum from the nursing assistant to the doctorally prepared nurse. Licensed vocational nurses and registered nurses currently form the core of providers of care, coordinators of care and members of the nursing profession. Preparation for the licensed vocational nurse (LVN) examination is at the vocational level. Programs are provided through either community colleges, hospitals or proprietary schools and are accredited by the Board of Vocational Nurse Examiners for the State of Texas (BVNE).

Basic educational preparation for the registered nurse licensure (RN) examination may be obtained through diploma, associate degree and baccalaureate degree programs of education. Each program provides the necessary preparation for practice as a registered professional nurse and is accredited by the Board of Nurse Examiners for the State of Texas (BNE).

Since the intent and focus of each of the different types of programs differ, the competencies of the graduates should also differ. However, the differences in competencies have not always been clear. As health care has changed and the demand for nursing has exceeded the supply, the roles and expected competencies have become blurred and overlapped. Curricula of nursing education programs were modified and yet communication among nursing education programs has been lacking. Thus graduates of VN, Diploma, and ADN programs have encountered obstacles in continuing their journey along the nursing practice continuum.

In response to concerns regarding barriers to educational mobility, the BVNE and the BNE for the State of Texas approved a joint committee to advise the Boards in several matters related to the needs of nursing and nursing education in August/September 1990. The committee, titled the Nursing Education Advisory Committee (NEAC), was developed in cooperation with the Texas Higher Education Coordinating Board. A total of 16 representatives from nursing, nursing education and health care comprised the "CORE" committee.

The major focus of NEAC related to the need to identify nursing competencies to be required of graduates from each type of basic nursing program. Three competency subcommittees were formed to identify the essential competencies - one subcommittee for vocation, one for diploma and associate degree nursing, and one for baccalaureate degree nursing. Representatives from all four types of programs and various practice settings served on each of the subcommittees.

The format used by the subcommittees to describe level competencies was based upon the format developed by the American Association of Colleges of Nursing for the Final Report of Essentials of College and University Education for Professional Nursing, 1986. The "Essential Competencies of Texas Graduates of Education Programs in Nursing" (1992) were approved by the BVNE and BNE.

PURPOSE

This document is written to describe the essential competencies expected of new graduates of nursing programs in Texas. Competency statements are provided for the following levels of education:

a) Vocational
b) Diploma and Associate degree
c) Baccalaureate degree

The competencies are written for nursing educators to meet the program accreditation criteria established by the Boards of Nursing.

Competencies are defined as "effective demonstration, by the time of graduation, of knowledge, judgement, skills and professional values derived from the nursing and general education content." The competencies describe the expected outcomes for students at the time of graduation.

The competencies are organized according to three major roles of the nurse: Provider of Care, Coordinator of Care, and Member of the Profession. Broad competency statements describe the expected behavior of the graduate. The competencies are then further described in terms of "knowledge needed to achieve the competency" and "related clinical judgements and behaviors."

The competency statements may serve as guidelines for preparation of statements regarding the utilization of new graduates in practice settings and the development of plans for building upon competencies. Periodic reviews and revisions of the competency statements must be conducted to ensure that the competencies reflect changes in the nursing practice arena.

VALUES IN NURSING

Through the educational process, students are provided the necessary experiences to develop the knowledge, behaviors and skills expected of practicing nurses. In addition, the clinical judgements of the nurse are guided by various values and beliefs about oneself and society. It is recommended that nursing educators strive to foster commitment to the following values believed to be inherent to professional nursing:

1. Altruism - Concern for the welfare of others seen through caring, commitment and compassion.
2. Human Dignity - Belief in the inherent worth and uniqueness of the individual seen through respectfulness, empathy, humanness, and trust.
3. Truth - Faithfulness to fact seen through honesty, accountability and authenticity.
4. Justice - Upholding moral and legal principles seen through courage, advocacy, and objectivity.
5. Freedom - Capacity to exercise choice seen through openness, self-direction, and self-discipline.
6. Equality - Having the same rights and privileges seen through acceptance, tolerance, and fairness.
7. Esthetics - Identifying the qualities of objects, events and persons that provide satisfaction as seen through creativity, sensitivity and appreciation.

The competencies with general descriptions of roles and responsibilities for each type of nursing follow. The competencies are organized in relation to the Board of Nurse Examiners "Standards of Professional Nursing Practice."

ESSENTIAL COMPETENCIES OF TEXAS
GRADUATES OF VOCATIONAL NURSING PROGRAMS

The vocational nursing program is a clinically intensive one year certificate program that offers classroom instruction and related clinical practice in the four basic areas of nursing care of adults, mothers and newborns, children and the elderly.

Supporting courses and content include basic human anatomy and physiology, microbiology, pharmacology, nutrition, life cycle/growth and development, emotional health and illness, vocational adjustments, legal and ethical aspects of nursing practice and nursing skills. Content for these supporting courses may be integrated within the nursing courses or may be taken as stand alone courses in colleges.

The primary role of the graduate of the vocational nursing program is to provide nursing care for clients in structured health care settings who are experiencing common, well-defined health problems with predictable outcomes.

COMPETENCY STATEMENTS
FOR VOCATIONAL NURSE GRADUATES

VN

A. Provider of Care

1. Assist in determining the health status and health needs of clients, based on interpretation of health-related data, in collaboration with clients, their families, and other members of the health care team.

KNOWLEDGE	CLINICAL BEHAVIOR/JUDGMENTS
a. Four steps in a systematic process (i.e., nursing process) which include assessment, planning, implementation and evaluation.	a. Take client history using structured assessment tool and structured interview.
b. Classification system for nursing diagnoses. (eg. NANDA)	b. Assist in performing basic assessment to identify health status and monitor for change.
c. Structured data collection tools and techniques of assessment of clients inclusive of interviewing.	c. Document assessment data.
d. Characteristics, concepts, and processes related to individuals, including gross anatomy, basic physiology, psychosocial growth and development, gross psychopathology, and major cultural and spiritual beliefs and practices related to health, illness, birth, death, and dying.	d. Report assessment data.
e. Basic characteristics, concepts, and processes related to transmission of common communicable diseases including individual risk factors.	e. Identify common and overt actual and potential health care needs of client.
f. Common medical diagnoses, drug and other therapies and treatments of clients for whom care is being given.	f. Make observations that assist the RN in formulating nursing diagnosis.

VN - Client = Individual

2. Assist in the formulation of goals and a plan of care for the client in collaboration with the client and other members of the health care team.

KNOWLEDGE

a. Dynamics of the individual nurse-client relationship.

b. Fundamental principles of disease prevention from health promotion to health restoration.

c. Basic interventions to support the client and family during life stages, including death and dying.

d. Relationship between the nursing plan of care, the therapeutic regimen, and the plans of other health care professionals.

e. Criteria for setting priorities in planning care for the individual client.

f. Written verbal and non-verbal modes of communication.

g. Steps and procedures in discharge planning process.

CLINICAL BEHAVIOR/JUDGMENTS

a. Identify short-term/immediate goals and select basic interventions in conjunction with the client.

b. Contribute to nursing plan of care identifying short-term/immediate goals for clients.

c. Identify obvious conflicts between the nursing plan of care and the plan of other health care professionals.

d. Discuss plan of care with members of health care team.

e. Assist in the discharge planning of selected clients.

3. Implement plan of care within legal and ethical parameters in collaboration with the client and members of the health care team.

KNOWLEDGE

a. Common health practices and behaviors related to different cultures and belief systems.

b. Basic modes of effective communication.

c. Basic rights and responsibilities of clients related to health care.

d. Physical, emotional, and cultural responses to alterations in health status.

e. Basic physiological, psychosocial, and spiritual aspects of common nursing interventions to meet basic needs.

f. Principles and factors that maintain or restore health.

g. Properties, effects, and principles underlying the use and administration of pharmacotherapeutic agents.

h. Principles of asepsis.

i. Coping mechanisms for managing stress and identifying resources for crisis management.

j. Code of vocational nurse ethics.

k. Legal parameters of vocational nursing practice and health care.

l. Available resources within the employment setting.

m. Federal, state, and local statutes and institutional policies regarding patient/client confidentiality.

CLINICAL BEHAVIOR/JUDGMENTS

a. Assist in promoting a safe, effective care environment conducive to the optimal health and dignity of the client.

b. Carry out safe and appropriate activities to assist client to meet basic physiologic needs including: oxygenation, nutrition, circulation, elimination, activity, comfort, rest and sleep.

c. Carry out nursing measures to promote rehabilitation.

d. Carry out measures to prevent the transmission of pathogens.

e. Provide basic initial intervention for emergencies such as CPR.

f. Initiate basic nursing measures to foster psychosocial well-being through appropriate sensory stimulation and promotion of integrity and autonomy.

g. Assist in fostering client growth during alterations in health status.

h. Safely administer medications and treatments following established protocols.

i. Assist members of the health care team with examinations and routinely performed procedures.

j. Monitor responses to medications, treatments and procedures.

k. Document responses to medications, treatments and procedures clearly and accurately.

VN - Client = Individual

	VN
n. Basic nursing procedures and skills to implement plans of care.	l. Report responses to medications and treatments to appropriate health care professionals.
	m. Observe and communicate Patient's Bill of Rights to clients.
	n. Recognize and communicate ethical and legal concerns through established channels of communication.
	o. Perform basic nursing procedures and skills safely and effectively.

VN - Client = Individual

4. Implement teaching plan for client with common health problems and well defined learning needs.

KNOWLEDGE

a. Developmental stages and common situational variables affecting learning, such as stress, pain and fear.

b. Basic principles of the teaching-learning process.

CLINICAL BEHAVIOR/JUDGMENTS

a. Identify basic health-related learning needs of clients.

b. Contribute to the development of a teaching plan.

c. Implement aspects of an established teaching plan.

d. Assist in evaluation of learning outcomes using structured evaluation tools.

VN - Client = Individual

Nursing Education Advisory Committee (NEAC) Report

Volume II

"Nursing Manpower: Trends and Issues"

March, 1993

Published by

Board of Nurse Examiners
For the State of Texas

Board of Vocational Nurse Examiners

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The boards also acknowledge the benchmark work of the American Association of Colleges of Nursing who published Essentials of College and University Education for Professional Nursing: Report to the Membership of AACN in October, 1986. The competencies and format developed by AACN were used as the primary structure for the "Essential Competencies of Texas Graduates of Education Programs in Nursing." Further, the staff of the Colorado Board of Nursing provided consultative support. A major reference for the development of the essential competencies in Texas was The Colorado Articulation Model, published by the Colorado Council on Nursing Education in 1990.

The staff of Joint Venture of the University of Texas Medical Branch in Galveston is gratefully acknowledged for their production of the many support papers and the Manpower Issues and Trends Report.

A special thanks goes to Marcia Collins and Art Cates of the Health Professions Resource Center, Bureau of State Health Data and Policy Analysis of the Texas Department of Health for their efforts in creating the clear and concise charts and tables which illustrate nursing manpower distribution on Texas.

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Nursing Education Advisory Committee (NEAC) Report

Volume III

"Executive Summaries"

March, 1993

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For the State of Texas

Board of Vocational Nurse Examiners

Appendix A

Nursing Education Advisory Committee (NEAC)

Name	Sponsoring Organization	Committee/Subcommittee
A. Joanna Seamans, MSN, RN (Co-Chair)	Board of Nurse Examiners	CORE, FIT Chair
Sandra Knight, LVN (Co-Chair)	Board of Vocational Nurse Examiners	CORE
Rella Adams, PhD, RN, CNAA	Valley Baptist Medical Center	BSN
Marie Bayard, MSN, RN	Kingwood College, Kingwood (North Harris/ Montgomery County Community College District)	CORE, VN Chair
Melissa Brannon, MSN, RN	Texas League for Nursing	CORE, MP
Tina Briones, MSN, RN	Valley Baptist Medical Center	Alternate to BSN
Maxine Cadena, MSN, RN	Baptist Memorial Hospital School of Vocational Nursing	VN
Edna Faye Campbell, BA, RN	Texas Department of Human Services	CORE, MP
Darlene Nebel Cantu, MSN, RN	Baptist Memorial Hospital School of Professional Nursing	BSN,FIT
Art Cates	Texas Department of Health	Resourse to MP
Marcia Collins	Texas Department of Health	CORE, MP
Veronica Conners, MSN, RN	Texas Nurses Association	Resource to MP
Anne Daub, BSN, RN	Texas Department of Mental Health/ Mental Retardation	DIP/ADN
Jean Dols, MS, RN	Lyndon B. Johnson Hospital	DIP/ADN
Roberta Eacott, MSHP, BSN, RN	Texas Department of Mental Health/ Mental Retardation	DIP/ADN
Elizabeth Ellis, MEd, MSN, RN	Methodist Hospital School of Nursing	CORE, DIP/ADN
Jane Ezell, MSN, RN	Texas Nurses Association	Resource to MP

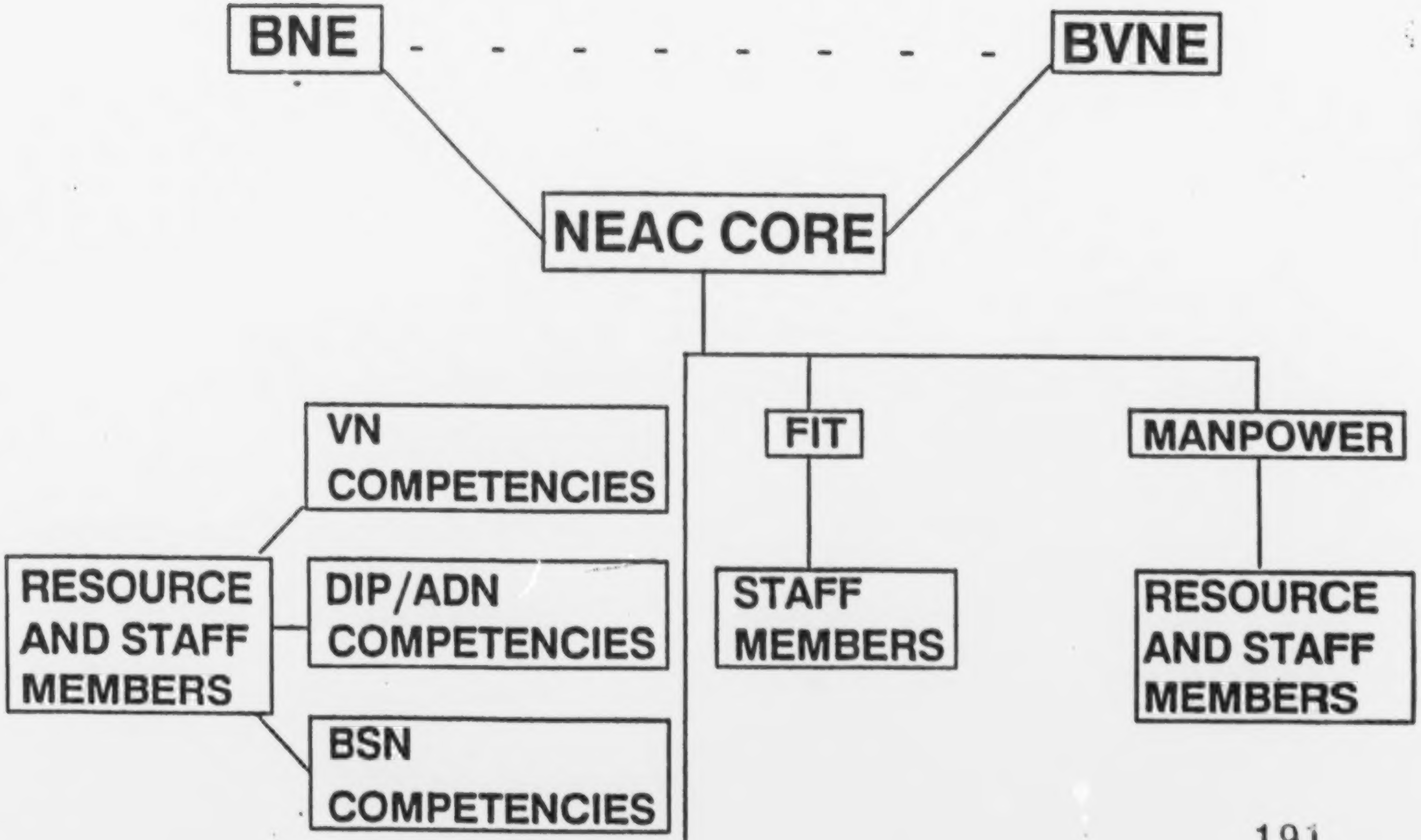
Patty Hawken, PhD, RN, FAAN	The University of Texas Health Science Center School Of Nursing	CORE, BSN
Carol Hodgson, MSN, RN, CS	Texarkana College	CORE, DIP/ADN Chair
Cora Johnson, LVN	Texas League of Vocational Nurses	CORE, MP
Joan Jones, MS, RN	St. Luke's Episcopal Hospital	BSN
Lucelia Jones, MS, RN	Texas Association of Vocational Nurse Educators	CORE, MP, FIT
Karlene Kerfoot, PhD, RN, FAAN	St. Luke's Episcopal Hospital	BSN
Jana Kidd, MSN, RN	West Texas State University	Alternate to VN
Suzanne Kier, PhD, RN	Texas Woman's University	MP
Chandler Lindsley	Consumer	CORE, BSN
Linda Linville, MS, RN	Texas Department of Health	CORE, MP
Kenneth Lowrance, MS, RN, CNAA	Goodall-Witcher Hospital Foundation	DIP/ADN
Chandler Lindsley	Consumer	CORE, BSN
Linda Linville, MS, RN	Texas Department of Health	CORE, MP
Kenneth Lowrance, MS, RN, CNAA	Goodall-Witcher Hospital Foundation	DIP/ADN
Mary Ann Lubno, PhD, RN	Texas Tech University Health Science Center	CORE, BSN Chair, FIT
Marianne Malague, MA, RN	North Harris County College	DIP/ADN
Beth Mancini, MSN, RN	Parkland Memorial Hospital	VN
Marilyn Morris, MEd, RN	Victoria College	VN
Yvonne Newman	Texas Higher Education Coordinating Board	CORE, BSN
Elizabeth Oliver, MSN, RN	Texas Organization for Associate Degree Nursing	CORE, BSN
Karen Paterno, MSN, RN	Odessa College	DIP/ADN
Marcia Poole, EdD, RN	Texas Organization of Nurse Executives	CORE, BSN, FIT
Anna Pearl Rains, MSN, RN	The University of Texas Medical Branch	Resource to MP

Boyd (Chip) Rhea	Texas Education Agency	CORE, VN
Shirley St. John, MSN, RN	Methodist Hospital School of Nursing	VN
Olivia Sandoval, MEd, MSN, RN	Baptist Memorial Hospital School of Professional Nursing	DIP/ADN
Nancy Schoenrock, PhD, RN	Mary Hardin Baylor University School of Professional Nursing	BSN
Britta Willeford-Strickland, RN	Texas Health Care Association	CORE, VN
Mary Beth Thomas, MSN, RN	Texas Nurses Association	Resource to MP
Delight Tillotson, MSN, RN	Texas Nurses Association	CORE, DIP, ADN
Melinda Tinkle, PhD, RN	The University of Texas at El Paso	MP
Bill Tucker, LVN	Girling Health Care	VN
Phyllis Turner, PhD, RN, CS	Texas League For Nursing	CORE, MP
Yvonne Van Dyke, MSN, RN	Austin Community College	MP
Phyllis Walk, MSN, RN	Baylor University Medical Center	DIP/ADN
Mary Jolene Walsh, EdD, RNC	West Texas State University	VN
Phyllis Waters, MS, RN	Texas Organization of Nurse Executives	CORE, MP Chair
Lois White, PhD, RN	Del Mar College	BSN
T.R. Williams, PhD	Texas Higher Education Coordinating Board	Support Staff
Margarette Youngblood, LVN	Licensed Vocational Nurses Association of Texas	CORE, MP
Mary Jane Ashe, MAN, RN	Board of Nurse Examiners	NEAC Coordinator

Committee/Subcommittee Legend

NEAC	Nurse Education Advisory Committee
CORE	Main Committee
VN	Vocational Nursing
DIP/ADN	Diploma/Associate Degree Nursing
BSN	Bachelor of Science in Nursing
MP	Manpower
FIT	Format-Implementation Team

COMMITTEES



BNE

BVNE

NEAC CORE

VN COMPETENCIES

DIP/ADN COMPETENCIES

BSN COMPETENCIES

RESOURCE AND STAFF MEMBERS

FIT

STAFF MEMBERS

MANPOWER

RESOURCE AND STAFF MEMBERS

Chapter E

Essential and Exemplary Tech Prep Exemplars Documents

This section is a work in progress and will be finished at a later date.

Chapter F

Essential and Exemplary Tech Prep Student Documents

This section is a work in progress and will be finished at a later date.

Section G
Essential and Exemplary Tech Prep Government Documents

The Purpose and Use of Tech Prep Consortia Documents

Tech Prep Consortia are the products of the Carl D. Perkins Act (1990), Title III, Part E, the Tech-Prep Education Act. In this act, Congress sought to alleviate the disparity in educational preparation and workforce needs. In investigating national education problems, Congress found that:

> (1) rapid technological advances and global competition demand increased levels of skilled technical education preparation and readiness on the part of youths entering the workforce;
> (2) effective strategies reaching beyond the boundaries of traditional schooling are necessary to provide early and sustained intervention by parents, teachers, and educational institutions in the lives of students;
> (3) the establishment of systematic technical education articulation agreements between secondary and post-secondary educational institutions is necessary for providing youths with skills in liberal and practical arts and in basic academics, including literacy instruction in the English language, and with the intense technical preparation necessary for finding a position in a changing workplace (104 Stat. 789).

Based on these findings, Congress created the Tech Prep Education Act. Tech Prep was funded with two explicit purposes. First, the Tech-Prep Education Act was to provide funds to states for planning and demonstration grants. These state grants were to be used to develop and operate four-year programs designed to provide a Tech-Prep education program leading to an associate's degree or a two-year certificate. The Tech-Prep programs were also to provide, in a systematic manner, strong comprehensive links between secondary and post-secondary institutions. The state of Texas believed that Tech Prep education could be best advanced by the formation of 25 Tech Prep consortia. These consortia had the responsibility of integrating the educational efforts of more than two regions.

Texas was not immune to the educational problems highlighted in A Nation at Risk. In 1984, the Texas Legislature passed House Bill 72, which brought major changes in the Texas educational system. Among these changes was a directive to the State Board of Education to develop a master plan for vocational education.

In 1986, the Leander Independent School District, working in conjunction with Austin Community College, received federal funding for a 2 + 2 program in Instrumentation and Control Technology. This was the first of eleven federally funded 2 + 2 (+ 2) pilot projects in Texas between 1986 and 1990.

The Tech Prep programs in Texas have their origins in several different pieces of federal and state legislation. Section G has the purpose of providing the essential and exemplary government documents that provide the philosophical foundations for Tech Prep. To a small extent this section is a samplar of key documents that will help the student of government policy analysis find the prime documents for the national and state Tech Prep initiative. The SPECAP exemplars should lead the scholar directly to the current legislation, executive regulations, and local policy.

The Texas Tech Prep Pilot Programs. In 1987, the Texas Education Agency [TEA], the Texas Higher Education Coordinating Board [THECB], and the Texas Department of Commerce [TDOC] formed a partnership called the Tri-Agency. The express purpose of the Tri-Agency was to support efforts of employers and educators to provide a skilled and educated workforce. TEA asked secondary institutions across Texas to develop curricula integrating vocational/technical and academic content. The Tri-Agency also established Quality Workforce Planning Committees [QWFPC] in 1987, to identify targeted occupations for local, regional, or state employment needs (Butler, Andrade, & Boyd, 1992). Through these Tri-Agency actions, interconnected programs were created to provide a concrete link between academic and vocational areas, particularly QWFPC targeted occupations. Preparations were made to implement Tech Prep programs across Texas.

In the 1989-1990 academic year another pilot project was initiated in Paris, Texas. This pilot provided for implementation of an eleventh-grade curriculum for health occupations with competency-based curricula. This Paris, Texas, health cluster was particularly amenable to multiple exit points, offering the flexibility desired in Tech Prep programs. The Tech Prep design was emerging in Texas and across the nation.

The Federal Legislation to Develop Tech Prep. Congress had heard testimony about the efectiveness of pilot Tech Prep programs throughout the nation and was interested in advancing the Tech Prep efforts. Amendments to the Carl D. Perkins Vocational and Technical Education Act of 1990 were enacted in 1991, authorizing funding for Tech-Prep through fiscal year 1995. These amendments provided for greater flexibility and required greater accountability.

As a reflection of the greater accountability, recipients of these funds were directed to evaluate the effectiveness of its projects, services, programs, and activities on an annual basis. Thus, vocational education was envisioned as playing a vital role in achieving the educational goals set forth for the American educational system.

The Federal/State Partnership to Advance Tech Prep. The Tech Prep Education Act (1990) brought swift action in Texas. The foundation for implementing Tech Prep programs was established through the pilot projects and Tri-Agency actions. Once Tech Prep was funded, the Tri-Agency met in early 1991 to discuss calling for grant proposals. On March 28, 1991, the Coordinating Board issued a request for proposals to fund the writing of Tech Prep implementation grants (Request for Proposals: Planning for Implementation of Tech-Prep Applied Technology Programs, 1991). Carl Perkins funds spawned the creation of Tech Prep consortia as functioning entities in the education of students across Texas.

The tri-agency is made up of the TEA, TDOC, and the THECB. Each agency has specific requirements and has the charge of overseeing all program and program revision applications.

1) Legislation
2) Coordination of Agencies
3) Local efforts

As part of TDOC, SOICC, and QWFPB play an increasingly important role in each consortium. Without all three branches of the tri-agency, Tech Prep could not be accomplished at the state-wide level in Texas.

It is important for the schools to develop Tech Prep programs that obtain tri-agency approval. Consequently, the forms, which allow the tri-agency to assess the educational effectiveness of a program, are essential components in Tech Prep Consortium activities and are included in this handbook. These essential documents are particularly useful to new Tech Prep directors who may have no previous experience with THECB, TEA, and TDOC forms and policies related to Tech Prep programs. Exemplary documents are invaluable aids that help the consortia develop working programs and gain THECB approval.

Description of Documents in this Section

The Laws Impacting the Curriculum
Federal Laws
Workforce Development Act
Careers Acts
Carl Perkins Act
THECB forms
State Laws and THECB Regulations
State laws
THECB
Proposals Impacting the Curriculum
RFP—Requests for Proposals
BGP—Block Grant Proposal from the Federal Government
The State Plan for Vocational and Applied Technology Education: Strengthening the Plan for the Future.
State Manuals Impacting the Curriculum
State Testing Systems Impacting the Curriculum
TAAS
Tax Formula Funding

G-60.31-a-1

S. 143, The Workforce Development Act of 1995

Purpose: Eliminate duplication, streamline federal employment training efforts and create statewide workforce development systems responsive to the labor market needs of the businesses of each state.

Authorized at $6.1 billion (Represents approximately 15% reduction from FY'95 level.)

Creates one large block grant going to the governor, of which 25% must be used for workforce education activities, 25% must be used for workforce employment activities, and 50% must be used for either at the governor's discretion. Workforce education activities would be administered by the state education agency.

Federal role: Up to 7% of the funds would be reserved for national activities. A Federal Partnership would be created to oversee national programs. Funds would be administered by either the Department of Labor or the Department of Education or both.

State role: States would receive amounts based upon percentages of population, poverty, unemployed and AFDC recipients. The governor may reserve up t5o 20% of the funds to administer statewide activities. The workforce education monies will be distributed within the state in the same manner as Perkins.

Local role: The optional Local Workforce Development Board would consist primarily of representatives of local businesses, but also includes representatives of local secondary and postsecondary educational institutions and individuals with disabilities.

Major Programs Affected: The Adult Education Act; Perkins Act; The School-to-Work Opportunities Act; The Wagner-Peyser Act; The Job Training Partnership Act; Older Americans Act of 1965.

Required uses of workforce education funds:

1. Integrating academic and vocational education
2. Linking secondary and postsecondary education, including implementing tech prep programs
3. Providing career guidance and counseling
4. Providing literacy and basic education services for adults and out-of-school youth
5. Providing GED programs for adults and out-of-school youth
6. Expanding, improving and modernizing quality vocational education programs
7. Improving access to quality vocational education for at-risk youth.

Effective Date: The new block grant structure would replace covered programs over a two year period. Generally, the programs previously funded separately would be eligible to compete at the state level for block grant funds.

Status: After passing the Senate Committee on Labor and Human Resources in June, the measure was temporarily merged with welfare reform. With strong grassroots pressure and a promise of a floor amendment to decouple the bills by Senators John Breaux (D-LA), Claiborne Pell (D-RI) and Ted Kennedy (D-MA), the measures were separated.

S. 143 is expected to go to the full Senate in late October.

From: Legislative Update, American Vocational Association, Fall, 1995

G-60.31-a-2

Overview of Proposed Legislation
Workforce Education and Training Block Grants

Senate **S 143: Workforce Development Act**
Allocation of Funding: 1. Workforce Education Activities 25% 2. Workforce Employment Activities 25% 3. Governor Flex Account 50%
Consolidated Programs and Legislation: Carl D. Perkins Act, School-to-Work Opportunities Act, Job Training Partnership Act, Food Stamp Employment and Training, Displaced Homemakers and Self-Sufficiency Assistance Act, Part B of Title III of Adult Education Act, Wagner Peyser Act, Job Opportunities and Basic Skills (JOBS), and other smaller programs.
Allowable Uses of Funds: Include Tech Prep, School-to-Work, one stop career centers, integration of academic and vocational education, and other broader guidelines for system building, new programs and program improvement.
Funds Administered by: The workforce education funds will be administered by the state education agency. The workforce employment funds and the flex account will be administered by the governor.
Role of Workforce Development Boards: Boards will be local and employer-led in charge of one-stop career centers. The boards will also have authority over local school-to-work programs. (Authority over Tech Prep remains in schools.)
Significant Changes to Current System: Required involvement of employers in local workforce development boards, 75% of funds determined by governor, consolidation of programs, less funding, and boarder goals at state level.
Effective Date: July 1, 1998
Last Action on Bill: Passed through comminee expect full Senate vote in mid-October.

G-60.32-a-1

H.R. 1617, The Consolidated and Reformed Employment, Education and Rehabilitation Systems Act (CAREERS)

Purpose: Eliminate duplication and create a streamlined federal workforce development and literacy system designed to meet the needs of the workforce and employers.

Authorized at approximately $5 billion, of which $2.3 billion will be used for the Youth Development and Career Preparation Grant (Represents approximately 20% reduction from FY'95 level).

Creates the following block grants going to the Governor: Youth Development and Career Preparation; Adult Employment and Training; and Adult Education and Family Literacy and Library Services and Technology. It allows governors to transfer up to 10% of funds between the Youth Development and Career Preparation Block Grant which contains vocational education programs, and the Adult Employment and Training Grant. Under the Youth Development and Career Preparation Grant, 40% of funds must be used for in-school youth, including vocational education programs and 40% must be used for at-risk youth. Ten percent would be used as incentive grants and the remaining 10% would be split, at the governor's discretion, between the in-school and at-risk programs.

Federal role: The lesser amount of $25 million or 20% is reserved for national programs. For the Youth Development and Career Preparation Grant, funds would be administered by the U.S. Department of Education. States would received an amount bearing the same ratio as an average of Perkins Act funds and JTPA youth program funding.

State role: Federal funds would flow to the governor. Through a collaborative process created by the governor, 90% of the funds in the youth block grant would be distributed to localities. The governor may reserve the remaining 10% of the youth block grant funds for statewide activities. Each governor must implement a substate formula, but has broad discretion in determining the formula.

Local role: Workforce Development Boards would be created, consisting mostly of representatives of business and industry, but also can include representatives from education, Community Based Organizations, employees and veterans. These Boards develop local workforce development plans, encompassing both in-school and at-risk youth programs. The Boards may act as the fiscal agent for at-risk youth programs, while in-school programs would be administer3ed by the school system.

Major Programs Affected: Perkins Act; School-to-Work Opportunities Act; Adult Education Act; Job Training Partnership Act.

State Uses of Youth Block Grant Funds:

1. Assessment of youth programs including the development of performance indicators and measurement and program improvement and accountability of the programs
2. support for tech prep education
3. support for workforce preparation programs for single parents, displaced homemakers and single pregnant women
4. support for corrections vocational education
5. professional development activities
6. development, dissemination and field testing of curricula
7. leadership and instructional programs in technology education
8. support for cooperative education
9. support for family and consumer sciences programs
10. creative use of technologies
11. support for vocational student organizations
12. improving comprehensive career guidance and counseling

Effective Date: The new block grant structure would take effect on October 1, 1996, replacing programs slated to be repealed. Generally, programs previously funded separately would be eligible to compete at the state level for block grant funds.

Status: Passed the House Committee on Economic and Educational Opportunities in May. Passed the U.S. House of Representatives on September 19.

From: Legislative Update, American Vocational Association, Fall, 1995

G-60.32-a-2

Overview of Proposed Legislation
Workforce Education and Training Block Grants

House BR 1617: Careers Act
Allocation of Funding: 1. Youth Development and Career Preparation 40% for in school youth 40% for out-of-school youth/at-risk 20% Governor discretion/state administration 2. Adult Employment and Training 3. Adult Education and Literacy
Consolidated Programs and Legislation: Carl D. Perkins Act, School-to-Work Opportunities Act, Job Training Partnership Act, Adult Education Act, National Literacy Act (except sec. 101), Part F of Technology for Education Act, and other smaller programs.
Allowable Uses of Funds: Include Tech Prep, School-to-Work, local business/education partnerships, inservice for vocational education teachers, upgrading curriculum, purchase of equipment, paid work experience for out-of-school youth, skill standards, etc.
Funds Administered by: The governor in a collaborative process with state agencies will determine administration at state level. Local workforce development boards will carry out programs for youth job training.
Role of Workforce Development Boards: Both the state and local workforce development boards will develop plans for workforce development and labor market information. They are in charge of integrated career centers (one-stops).
Significant Changes to Current System: Planning and collaboration through workforce development boards, system building to support workforce education and training programs through governor's office, consolidation of programs and performance standards, reduction of funding.
Effective Date: July 1, 1997
Last Action on Bill: Passed by house waiting for conference with Senate.

G-61.11-a-1

The Texas Higher Education Coordinating Board
Community and Technical Colleges Division
P.O. Box 12788, Capitol Station
Austin, Texas 78711-2788

and

the Inter-Agency Partnership of the
Texas Higher Education Coordinating Board
Texas Education Agency,
Texas Department of Commerce,
Texas Employment Commission, and
Texas Workforce Commission

present this

REQUEST FOR PROPOSALS

for Activities to Support

THE CARL D. PERKINS VOCATIONAL AND APPLIED TECHNOLOGY EDUCATION ACT OF 1990

including

Tech-Prep Associate Degree Programs,
Skill Standards Projects, and
Federal Workforce Education Initiatives

Program Year (PY) 1997
July 1, 1996 - June 30, 1997

Deadline for Receipt of Proposals:
March 22, 1996

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The Texas Higher Education Coordinating Board does not discriminate on the basis of race, color, national origin, gender, religion, age, or disability in employment or the provision of services.

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G-61.30-a-1

TEXAS HIGHER EDUCATION COORDINATING BOARD
COMMUNITY AND TECHNICAL COLLEGES DIVISION
GRANT APPLICATION FOR TECH-PREP IMPLEMENTATION PROJECTS
FUNDED UNDER THE
CARL D. PERKINS VOCATIONAL AND APPLIED TECHNOLOGY EDUCATION ACT OF 1990
JANUARY 15, 1992 THROUGH JUNE 30, 1992

1. ______________________________
Eligible Applicant

2. ______________________________
Mailing Address

3. ______________________________
City, State, Zip

4. ______________________ (____) - __________
Contact Person Phone

5. ______________________________
Title of Consortium

6. TECH-PREP IMPLEMENTATION $__________
Amount Requested

7. ______________________________
Authorized Representative (Name and Title)

______________________ __________
Authorized Signature Date

8. The authorized signature indicates that all the assurances And provisions included herein will be followed and that the institution to which the grant is assigned will assume the necessary responsibilities to identify, document, and track all the funds provided by this grant.

DO NOT COMPLETE BELOW THIS LINE:

Recommended for Approval by:

Signature of Director of Federal Projects	Project Number
Signature of Program Director	$ Amount Approved
Signature of Fiscal Officer	Advisor

G-61.30-a-2

APPENDIX B

Name of Consortium ______________________________

Applicant Institution______________________________

2. PROPOSAL ABSTRACT

(Abstract should be limited to one page.)

APPENDIX B

Name of Consortium ______________________________

Applicant Institution______________________________

3. PROGRAM ARTICULATION AGREEMENTS

(Attach signed articulation agreements.)

4. LIST OF CONSORTIUM PARTICIPANTS

Provide a list of all participating consortium members.
Clearly designate the project fiscal agent and the project facilitator.

For each participant provide:

Entity
Contact person
Title or position
Address
Phone number
FAX number

APPENDIX B

Name of Consortium ______________________

Applicant Institution______________________

5. Role of Consortium Participants and Evidence of Coordination

APPENDIX B

Name of Consortium ______________________________

Applicant Institution______________________________

6. PROGRAM NARRATIVE/DESCRIPTION

6.1 Narrative - In narrative form, and in the order listed below, address the following items:

A. Describe prior studies and research related to the planning and implementation of Tech-Prep Programs and 2+2(+2) projects.

B. Define the regional boundaries for the project consortium.

APPENDIX B

Name of Consortium ______________________________

Applicant Institution______________________________

C. Describe how information from the appropriate Quality Work Force Planning Committee(s) has been or will be used in program planning decisions and the critical role of Quality Work Force Planning Committees and all consortium participants in designing education and training programs.

D. Address the requirements of the Perkins Act which requires that special population students have equal access to participation in Tech-Prep programs, and requires student outcome measures.

G-62.02-a-1

Agenda

The State Plan for Vocational and Applied Technology Education: Strengthening the Plan for the Future

A Public Hearing Teleconference

by

The Texas Council on Workforce and Economic Competitiveness and The Texas Higher Education Coordinating Board

1:30 - 1:45 **Teleconference Overview and Opening Remarks**
Overview of Agenda and Introduction of Panel - Cindy Geisman, TCWEC
Welcome - Diane Rath, TCWEC Chair
Comments from the Governor's Office - Ara Merjanian

1:45 - 2:30 **Part I: Review of The State Plan for Vocational and Applied Technology Education**
Introduction - Ron Curry, THECB
and Comments from the Viewing Audience

2:30 - 2:40 **Break**

2:40 - 3:20 **Part II: State's Role under Block Grants and Other Changes**
Introduction - Anne Dorsey, TCWEC
and Comments from the Viewing Audience

3:20 - 3:30 **Close**
Wrap-up and Next Steps - Cindy Geisman, TCWEC
Closing Remarks - Diane Rath, TCWEC Chair

TCWEC Teleconference
Perkins State Plan and State Role under Federal Block Grants
Briefing Paper

Introduction

The Texas Council on Workforce and Economic Competitiveness (TCWEC), in its role as the state advisory council on vocational education under the 1990 Carl D. Perkins Vocational and Applied Technology Education Act (Perkins Act), must comment on the following for the State Plan period ending June 30, 1996:

- the current Perkins State Plan for Vocational and Applied Technology Education;
- the adequacy or inadequacy of State action in implementing the State Plan; and
- policies the State should pursue to strengthen vocational education.

To receive as much local input into these issues as possible, TCWEC will be soliciting local comments at a series of secondary public hearings and a postsecondary STARLINK teleconference.

STARLINK Teleconference	February 8, 1996
Secondary Public Hearings:	
El Paso	February 14, 1996
Houston	February 29, 1996
Midland	March 18, 1996
Austin	March 21, 1996

Given the fact that the Perkins Act will most likely not be reauthorized, TCWEC will broaden the discussion to address not just the current Perkins State Plan, but the role of the State in the light of impending workforce consolidation legislation. Please note that these discussions will be limited to ***federal*** funding for youth workforce development (Perkins and JTPA youth funds), and state policies related to ***federal*** funding.

Format and Background Information

The public hearings and teleconference will each be divided into two segments:

1) discussion of the current Perkins State Plan; and
2) discussion of the role of the State in the context of new workforce consolidation legislation.

The briefing information below provides participants with pertinent background information and related questions to prepare for the discussion at the hearings and teleconference.

Guidelines for Instructional Programs in Workforce Education

(formerly titled Technical Education Program Guidelines)

Texas Higher Education Coordinating Board
Community and Technical Colleges Division
Austin, Texas

January 1996

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Texas Higher Education Coordinating Board

APPLICATION FOR PROGRAM REVISION

DESCRIPTIONS OF PROPOSED NEW COURSES
(duplicate as needed)

An institution requesting that new courses be added to a revised program must supply courses descriptions below. These descriptions should be written as they appear in the institution's catalog, including course prefix, number, title, description and prerequisites. Technical course descriptions must reflect occupational competencies.

Institution: Collin County Community College **FICE Code:** 023614

Program: Management Development **CIP Code:** 520201

3.) Course Title: Quality Management Techniques
Course Prefix/Number: BUSI 2371
Course Description: Students examine the technical processes of quality management programs and learn effective procedures for developing comprehensive productivity improvement systems. Topics for this course include needs analysis, benchmarking, delivery systems, and process simplification.
Prerequisite: BUSI 2370

4.) Course Title: Management of Change
Course Prefix/Number: BUSI 2373
Course Description: This course will expose the student to the knowledge ,skills, and tools that enable a leader/organization to facilitate change in a pro-active participative style, leading to accomplishments consistent with the strategic goals of the organization.

Texas Higher Education Coordinating Board

APPLICATION FOR PROGRAM REVISION

DESCRIPTIONS OF PROPOSED NEW COURSES
(duplicate as needed)

An institution requesting that new courses be added to a revised program must supply course descriptions below. These descriptions should be written as they appear in the institution's catalog, including course prefix, number, title, description and prerequisites. Technical course descriptions must reflect occupational competencies.

Institution: El Centro College
FICE Code: 004453
Program: Perioperative Nurse Internship
CIP Code: 510909

SGT162 Perioperative Nurse Internship II (6)

Prerequisites: Minimum grade of "C" in Perioperative Nurse Internship I and current licensure by the Board of Nurse Examiners for the State of Texas. In this course the student expands the principles and skills learned in Perioperative Nurse Internship I. Included are: Specific patient preparations and care for given surgical procedures; wound healing; complications of anesthesia and surgery; and pre and post-operative visits. The circulating role is emphasized. (4 lec, 20 lab)

Texas Higher Education Coordinating Board

APPLICATION FOR PROGRAM REVISION

DESCRIPTIONS OF PROPOSED NEW COURSES
(duplicate as needed)

An institution requesting that new courses be added to a revised program must supply course descriptions below. These descriptions should be written as they appear in the institution's catalog, including course prefix, number, title, description and prerequisites. Technical course descriptions must reflect occupational competencies.

Institution:	KILGORE COLLEGE	FICE Code:	003580
Program:	EARLY CHILDHOOD PROFESSIONS	CIP Code:	

ECHP 2405 Learning Environments, Activities, and Materials:
School-age Children
Lecture: 3 Lab: 2 Contact: 80 Credit: 4 Type of Instruction: 1/2

Focuses on the developmentally appropriate needs and characteristics of school-age children. It includes curriculum strategies for a population that experiences great changes in physical, mental, and social development; environmental planning; age appropriate materials and activities; guiding children in self-management; and conflict resolution. Staff teamwork, ethical problem solving, and interpersonal relationships are incorporated in the course objectives. Prerequisites: ECHP 1401, 1402, and 1403. Participation in an after school child care program is required.

Texas Higher Education Coordinating Board

APPLICATION FOR PROGRAM REVISION

DESCRIPTIONS OF PROPOSED NEW COURSES
(duplicate as needed)

An institution requesting that new courses be added to a revised program must supply course descriptions below. These descriptions should be written as they appear in the institution's catalog, including course prefix, number, title, description and prerequisites. Technical course descriptions must reflect occupational competencies.

Institution:	KILGORE COLLEGE	FICE Code:	003580
Program:	EARLY CHILDHOOD PROFESSIONS	CIP Code:	

ECHP 2407 Early Childhood Business Planning
Lecture: 3 Lab: 2 Contact: 80 Credit: 4 Type of Instruction: 1/2

Focuses on the skills and knowledge needed to start and operate an early childhood business. Students go through the process of planning their own business including needs assessment, licensing requirement, location, public relations, finances, insurance, hiring practices, program planning and evaluation. This is considered an advanced skills or honors course. Prerequisites: CHID 1401, 1402, 1403, and 1405.

Texas Higher Education Coordinating Board

APPLICATION FOR PROGRAM REVISION

DESCRIPTIONS OF PROPOSED NEW COURSES
(duplicate as needed)

An institution requesting that new courses be added to a revised program must supply course descriptions below. These descriptions should be written as they appear in the institution's catalog, including course prefix, number, title, description and prerequisites. Technical course descriptions must reflect occupational competencies.

Institution:	**Brazosport College**	FICE Code:	7857
Program:	**Engineering Graphics and Design**	CIP Code:	48.0101

ENGD 1355 MACHINE DRAFTING - A study of techniques as related to preparing detailed machine drawings. Emphasis is placed on advanced dimension, tolerance, gears and fundamental concepts needed to complete an assembly drawing. The student will use advanced drafting techniques, possibly including CAD in completing the assigned project. Prerequisite: ENGD 1310 or approval of division chairman. (2-2)

G-65.12-a-1

SAN JACINTO COLLEGE [redacted]
SAN JACINTO COLLEGE NORTH
SAN JACINTO COLLEGE SOUTH

FICE CODE: [redacted]
FICE CODE: 012713
FICE CODE: 000090

Texas Higher Education Coordinating Board
REVISED
APPLICATION FOR APPROVAL OF ~~NEW~~ TECHNICAL PROGRAMS

ASSURANCE OF CERTIFICATE STANDARDS

Students pursuing certificate programs approved by the Coordinating Board will be required to meet competency-based technical skills and proficiencies in the three basic foundation skills and five work-place competencies as defined in *A SCANS Report for America 2000*, published by the U.S. Department of Labor in June 1991. For further information on this, see pages 10-11 of the *Guidelines*.

In the space below, provide an institutional assurance that the certificate program, if approved by the Coordinating Board, will meet the above proficiency requirements.

The SCANS Competencies practiced within each course are identified within each syllabus. Additionally, a grid of required courses and SCANS competencies is maintained for each program. The grid for the Certificate of Technology for Computer Information Systems - Business Option is shown below.

CURRICULUM OUTLINE WITH SCANS COMPETENCIES IDENTIFIED

Program: Computer Information Systems - Business Option

Credential: Certificate of Technology

List of All Courses Required and Identified Competencies (Effective Fall 1995)

Competencies									Course Number	Course Title	Competency References
1	2	3	4	5	6	7	8				
x	x	x	x	x	x	x		•	CSCI 1312	Introduction to Programming	1 = Reading 2 = Writing 3 = Arithmetic or Mathematics 4 = Speaking & Listening 5 = Thinking Skills 6 = Personal Qualities 7 = Workplace Competencies 8 = Basic Use of Computers
x	x	x	x	x	x	x	x	•	CSCI 1321	Introduction to Microcomputers	
x	x	x		x			x	•	CSCI 1323	Introduction to Operating Systems	
x	x	x	x	x	x	x	x	•	CSCI 1325	Pascal Language	
x	x	x	x	x	x	x	x	•	CSCI 1326	COBOL Language I	
x	x	x	x	x	x	x	x	•	CSCI 1328	BASIC Language	
x	x			x		x	x	•	CSCI 1336	Introduction to Desk-Top Publishing	
x	x			x		x	x	•	CSCI 1341	Introduction to Networking	
x	x	x		x			x	•	CSCI 2315	C Programming Language	
x	x	x	x	x	x	x	x	•	CSCI 2317	Advanced BASIC Language	
x	x	x	x	x	x	x		•	CSCI 2318	COBOL Language II	
x	x	x		x		x	x	•	CSCI 2321	Microcomputer Spreadsheet Analysis	
x	x	x		x			x	•	CSCI 2333	Database Systems	
x	x		x	x	x	x		•	CSCI 2335	Communications Programming	
x	x		x	x	x	x	x	•	CSCI 2336	Systems Design and Implementation	
x	x	x	x	x	x	x	x	•	CSCI 2340	Supervised work Internship	
x	x			x	x	x	x	•	CSCI 2350	Special Topics	

* Indicates syllabus revised January 1995 to integrate Student Learning Outcomes and SCANS Competences

BEST COPY AVAILABLE

Chapter H

Essential and Exemplary Tech Prep Home and Public Documents

This section is a work in progress and will be finished at a later date.

Section I
Essential and Exemplary Tech Prep Industry and Business Documents

The Purpose and Use of Tech Prep Consortia Documents

Business and industry, in exemplary programs, have leapt into the educational arena. Businesses are often enthusiastic about the interest the schools are showing in their work and their input.

Maldonado and Bubb (1996,1) note "The desire of the private-sector employers to take key leadership roles emerged as the best and brightest hope that Tech Prep had to produce the necessary changes in educational systems." The SPECAP Staff analyses found that some of the most exemplary strategic planning for Tech Prep in the state occurred in the Lower Rio Grande Tech Prep Consortium with the private sector employers taking the leadership in collaborative education developments.

Maldonado and Bubb (1996, 4) attest to the impact that the Tech Prep leaders had in planning change. "A lot of credit for the changes that are emerging goes to the influences and vision set by the private-sector entrepreneurs who have provided the leadership for Tech Prep and the educators whose knowledge of the system was critical in defining a delivery plan."

Description of Documents in this Section

List of Targeted Occupations
Survey of Area Business and Industry Needs

I-85.1-a-1

Seguin Independent School District
Career and Technology Department
P. O. Box 31
Seguin, Texas 78156-0031
Phone: 210-372-5770 Ext.377
FAX: 210-372-5770 Ext. 308

SURVEY OF GUADALUPE COUNTY BUSINESS AND INDUSTRY NEEDS

In the spring of 1995, the Seguin Independent School District received funds from the Capital Area Tech Prep Consortium and the Alamo Tech Prep Consortium to conduct a survey and to compile the results. This survey was to determine the employment needs of selected businesses and industries in Guadalupe County. The Career and Technology Department at Seguin High School was responsible for the coordination of this effort.

Introductory letters and survey instruments were mailed to the sites prior to the visits. A group of Career and Technology teachers teamed with academic teachers to conduct interviews with the employers and employees at the selected sites. Each participating entity was visited by one of the teams to discuss the survey results and identify additional concerns and needs.

To maintain and move into the global economy, Seguin Independent School District and the employers of Guadalupe County must keep pace with the times in training, retraining, education and the enhancement of the workforce in the area. This survey in an effort to form partnerships with businesses and industries and the educational entities; to determine the education and training requirements for entry, technical and professional level positions; and to assist in designing career and technology and academic programs to meet these needs.

The compiled survey is included in this document for your review. These results may be used in designing educational programs that are responsive to the needs of the community and Guadalupe County. Seguin ISD will also use the results to assist us in focusing the curriculum to meet the identified employment needs. It is hoped that you will review the results and use the survey design to assist you in your district and community to form similar partnerships and provide school-to-work transition opportunities for students.

We would also like to express our sincerest appreciation to the businesses and industries and their employees for all of their assistance in this endeavor. The support of these employers and the community to Seguin ISD is boundless.

We would also like to thank the administrators of Seguin High School and the District for making this effort possible. For their tireless efforts in conducting interviews and coordinating the information to become the document that it is today, we would like to thank the following personnel: Janette Lawlis, Career Coordinator; teachers, Jerry MyCue and Joel Day, Drafting & Design; Hugh Timmons, Electronics; Jeff Schuehle, Metal Trades; Nancy Virdin, English; Bobbie Haskit, Home Economics; Jared Marks, Health/coach; George Ann Fuqua, Health Occupations; and Gary Vaughn, Social Studies/coach.

1996
REGIONAL TARGETED
OCCUPATIONS
FOR TEXAS

February 1996

Prepared in cooperation between the
Texas Education Agency and the
Texas Workforce Commission
by Jo Alexander and Dave Kinnaman
Quality Workforce Planning
(512) 475-3428

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COASTAL BEND REGION

1993–94

KEY INDUSTRIES

- Health Services
- Social Services
- Business Services
- Wholesale Trade Durable
- General Building Contractors
- Specialty Trade Contractors
- Petroleum & Coal
- Electric, Gas, and Sanitary Services
- Engineering & Mgmt Services
- Hotels
- Legal Services
- Wholesale Trade Non–Durable
- Heavy Construction
- Chemicals & Allied Products
- Communications

TARGETED OCCUPATIONS

- Aircraft Mechanic
- Auto Body Repairer
- Auto Mechanic
- Chemical Technician
- Civil Engineer, Technician
- Computer Aided Drafting Technician
- Computer Engineer
- Computer Operator
- Computer Programmer
- Computer Systems Analyst
- Cook, Institution
- Cook, Restaurant
- Correction Officer
- Cost Estimator
- Data Processing, Equipment Repairer
- Dental Assistant
- Dental Hygienist
- Designer, Except Interior
- Diesel/Bus/Truck Mechanic
- Electric Powerline Installer
- Food Service Manager
- Heating/AC Mechanic
- Intergenerational Care Giver
- Laboratory Analyst/Environmental
- Licensed Practical Nurse
- Machinist
- Maintenance Repairer, General
- Medical Lab Technologist
- Medical Records Technician
- Medical Secretary
- Office Automation Specialist
- Operating Engineer
- Paralegal Personnel
- Personnel Specialist
- Physical Therapist
- Plumber/Pipefitter
- Radiologic Technician
- Recreation Worker
- Registered Nurse
- Respiratory Therapist
- Teacher, Elementary
- Teacher, Preschool
- Transportation Agent
- Travel Agent
- Waste Recycling Specialist
- Welder & Cutter

CRITICAL GROUPS

* Medical/Health Care Technologies
* Information Technologies
* Engineering and Design Technologies
* Environmental Technologies

Chapter J

Essential and Exemplary Tech Prep Outside Initiative Documents

This section is a work in progress and will be finished at a later date.

Chapter K

Essential and Exemplary Tech Prep Economic Development Documents

This section is a work in progress and will be finished at a later date.

ESSENTIAL TECH PREP GLOSSARY

Academic administrators - Professional staff members who have the authority to ensure that program quality is maintained. Also, that technical and occupational degrees and certificate programs and adult vocational courses are conducted in compliance with all applicable laws, rules, and guidelines.

Academic year - See *Program year*.

Access - The student's ability to enter a program, based on institutional admissions policies and procedures that define criteria for admission, in a public open-door institution.

Administration - Those activities necessary for the proper and efficient performance of duties under the Carl Perkins Act, including management, but not including curriculum development activities, personnel development, or research activities.

Adult vocational course - A postsecondary technical/vocational education course offered for credit or non-credit, conducted in a competency-based format to provide flexible, quick response; and intensive preparatory, supplemental, or upgrade training with specific occupational, related instruction and/or apprenticeship training objectives.

Adult Vocational Guidelines and Common Course Manual - Procedures, guidelines, and pre-approved course listing of the Texas Higher Education Coordinating Board to assist administrators of public community and technical colleges in fulfilling requirements for state funding of adult vocational courses.

Advanced Associate Degree - An Associate of Applied Science Degree awarded concurrently with an Advanced Skills Mastery Certificate to a graduate of a Tech Prep Associate of Applied Science Degree program, requiring a skill proficiency level that goes beyond the traditional associate degree.

Advanced placement - Any agreement or plan between educational institutions that enables students to receive credit for, or bypass courses in a higher educational program.

Advanced Skills Mastery Certificate - A certificate that is granted for advanced skills attained either concurrently and within, or after an Advanced Associate of Applied Science Degree.

Advanced technical skills - Technical skills identified and validated by business, industry, and labor that require a higher level of proficiency than those resulting from the traditional Applied Associate Degree.

All aspects of an industry - With respect to a particular industry, this includes planning, management, finance, technical and production skills, underlying principles of technology, labor and community issues, health and safety, and environmental issues related to that industry.

Alternative assessments - Evaluations such as performance-based models, portfolios, and multi-media presentations that complement traditional examination methods of Tech Prep.

Annual application - The application required by eligible postsecondary institutions desiring funds authorized by the Carl D. Perkins Act of 1990, submitted to the Texas Higher Education Coordinating Board for approval, under Title II, Section 240, of the Act.

Applied academics - The presentation of subject matter in a way that integrates a particular academic discipline with workforce applications. Emphasis is on relevance to the work environment.

Applied Associate Degree program - The Associate in Applied Arts, the Associate in Applied Science, and the Associate in Occupational Studies Degrees. The term "applied" in an associate degree indicates coursework focusing on technical aspects, e.g. *****.

Apprenticeship Advisory Committee - The Apprenticeship and Training Advisory Committee to the State Board for Vocational Education.

Apprenticeship training program - A program registered with the Department of Labor or the State Apprenticeship Agency in accordance with the National Apprenticeship Act (29 U.S.C. 50), that is conducted or sponsored by an employer, a group of employers, or a joint apprenticeship committee representing both employers and a union, and that contains all terms and conditions for the qualification, recruitment, selection, employment, and training of apprentices.

Articulation - A planned process linking educational institutions and experiences that assist students in making a smooth transition from one level of education to another without experiencing delays or redundancy in coursework.

Articulation agreement - An agreement between a high school or school district and a postsecondary institution, ensuring a non-duplicated offering of courses with stringent essential elements, usually in grades 11-14 and ending in an associate's degree.

Associate of Applied Arts Degree program (AAA) - An academic program of study emphasizing the application of artistic principles and the humanities through an orderly, identifiable sequence of courses designed to meet specific occupational competencies and outcomes. The degree program is designed for immediate employment and/or career advancement and is composed of technical courses, general education courses, related instruction courses, and, as appropriate, elective courses.

Associate of Applied Science Degree program (AAS) - An academic program of study designed for immediate employment and/or career advancement that is composed of an orderly, identifiable sequence of courses designed to meet specific occupational competencies and outcomes. The degree program is composed of technical courses, general education courses, related instruction, and, as appropriate, elective courses to prepare student for employment as technicians or paraprofessionals.

Basic workplace skills - See *Workplace Competencies and Foundation Skills.*

Block Format - A delivery mechanism that allows a program to be offered in a shortened and more intensive time frame, usually requiring students to attend class for 20 to 40 contact hours per week.

Bureau of Apprenticeship Training of the U.S. Department of Labor (BAT) - *****.

Capstone experience - A licensure exam or comprehensive, discipline-specific examor project.

Career and Technology education - An organized educational program offering a sequence of courses which are directly related to the preparation of individuals in paid or unpaid employment, in current or emerging occupations requiring other than a baccalaureate or advanced degree.

Career development personnel - Professional staff members delivering career development services, including information and planning, placement, counseling and guidance, as well as testing and assessment of students.

Career guidance and counseling - Programs that (1.) Pertain to the body of subject matter and related techniques and methods organized for the development of individuals in career awareness, planning, decision-making, placement skills, and knowledge and understanding of local, state, and national occupational, education, and labor market needs, trends, and opportunities; and (2.) Assist those individuals in making and implementing informed educational and occupational choices.

Career pathways - The general paths students choose from among eight occupational clusters and a multitude of careers. Exit points occur at high school graduation, after two years of community college or other specialized training, and after four years of college.

Carl D. Perkins Vocational and Applied Technology Education Act of 1990 - Referred to throughout this document as the Carl D. Perkins Act. *****.

Census data - The official data which public community and technical colleges must report enrollment figures to the Texas Higher Education Coordinating Board for state reimbursement.

Central Education Agency (CEA) - In Texas, this is the Texas Education Agency (TEA).

Certificate - A formal award, less than an associate degree, indicating mastery of a prescribed series of competencies with defined employment outcomes.

Classification of Instruction Programs (CIP code) - A taxonomy for instructional programs, at all levels, developed by the U.S. Department of Education's Center for Education Statistics.

Classroom-to-Workplace transition program - See *School-to-Work transition*.

Clinical education - A method of instruction between a sponsoring clinical agency and the student, that provides student training and experience in the workplace, with the goal of reaching established learning objectives as outlined in a formal plan developed by institutional staff. Clinical practice is supervised by qualified faculty members, sometimes an immediate supervisor such as a nurse, employed by the educational institution sponsoring the program.

Coherent sequence of courses - A series of courses, recommended for specific career pathways, in which vocational and academic education are integrated, and which directly relate to, and leads to, both academic and occupational competencies. The term includes competency-based education, academic education, and adult training or retraining that meet these requirements.

Cohort - A group of students having a common class membership as determined by their first term of active enrollment and for whom tracking records are maintained.

Commissioner - The Commissioner of Higher Education.

Common-course numbering system - A system of designating college credit courses with a common numbering system. These systems, agreed upon by a group of cooperating institutions, are intended to help standardize course identification, evaluation, interpretation, and to foster articulation and the transfer of credit.

Community-based organization - A private nonprofit organization of demonstrated effectiveness that is representative of communities or significant segments of communities and that provides job training services. Some examples of community-based organizations include the Opportunity Industrialization Center, National Urban League, SER-Jobs for Progress, United Way of America, Mainstream, National Puerto Rican Forum, National Council of La Raza, 70,001, Jobs for Youth, organizations operating career intern programs, neighborhood groups and organizations, community action agencies, community development corporations, vocational rehabilitation organizations, rehabilitation facilities, agencies serving displaced homemakers, union-related organizations, and employer-related nonprofit organizations, and an organization of demonstrated effectiveness serving non-reservation Indians (including the National Urban Indian Council), as well as tribal governments and Native Alaskan groups.

Competency-based course articulation - The traditional method of comparing course competencies and performance levels from a secondary competency-based course to a postsecondary introductory competency-based course. If the competencies and performance levels match, articulated credit may be awarded. This is the type of articulation most often used in Tech Prep programs.

Competency-based education (CBE) - An educational program designed to teach applied and/or job-related clusters of skills, knowledge, and attitudes, as well as expected performance levels required for successful employment within a defined job or cluster of jobs, as collaboratively defined by educators, business, and industry, and that form the basis upon which a student is evaluated.

Competency-based technical/vocational education program - A program that is based on precisely stated industry validated competencies; organizes and delivers instruction focusing on the learning needs of the individual; and evaluates students on their ability to demonstrate mastery of the competencies.

Competency form - A form designed by a two-year college to be completed by the high school instructor, showing levels of competency of students in career and technology performance tasks.

Competency profile/portfolio - A comprehensive profile of the specific skills a student has mastered. The profile is updated continuously and accompanies the student's transcript and/or résumé, and may constitute a portion of an employment portfolio.

Completer - A student who completes a Texas Higher Education Coordinating Board-approved degree or certificate program in technical education or who has completed a planned sequence of courses designed to meet an occupational objective.

Completer rate for Coordinating Board - All first-time-in-college students who enroll in the fall semester compared to the count of those of the same cohort who complete, within five years, a Texas Higher Education Coordinating Board-approved degree or certificate program in technical education or who are defined as a marketable skills achiever.

Completer rate for federal requirement - All first-time-in-college students who enroll in the fall semester and who declare a major and enroll full time (12 semester credit hours or its equivalent) will be compared to the count of those who graduate (degree or certificate) within one and one-half times the normal time period for completion (3 years for an associate degree, 1 to 2 years for a certificate).

Comprehensive course - A technical course designed to be exploratory in nature and provide students with a broad exposure to an entire industry.

Consortia - These are groups of institutions with signed program articulation agreements. Tech Prep consortia must be composed of a minimum of one public institution of higher education and more than one independent school district (ISD) unless a single ISD has a sufficient enrollment of students to support a Tech Prep program. Consortia must provide evidence of direct business and industry, Private Industry Council (PIC), and Quality Work Force Planning Committee involvement.

Contract instruction - Instruction, generally for technical education and training, in which specific targeted instruction is provided by the postsecondary institution to the contracting entity. This arrangement is utilized when conventional methodology or instructional systems are difficult or impossible to obtain.

Cooperative course - A technical course designed to provide occupational-specific training in an occupation; planned and supervised cooperatively by the local educational agencies and employers.

Cooperative education - A method of instruction of vocational education for individuals who, through written cooperative arrangements between the school and employers, receive instruction, including required academic courses and related vocational instruction by alternation of study in school with a job in any occupational field. The two experiences must be planned and supervised by the school and employers so that each contributes to the student's education and employability. Work periods and school attendance may be on alternate half days, full days, weeks, or other periods of time in fulfilling the cooperative program.

Cooperative learning - System of techniques and activities performed by students in small groups, which seek to develop social skills and increase content learning. It differs from standard group work in that it promotes positive interdependence, individual accountability, and interpersonal and small group skills.

Coordinating Board - The Texas Higher Education Coordinating Board.

Core curriculum - A designated group of courses, in one or more educational programs, that constitute a desired breadth of knowledge acquired from several academic disciplines.

Correctional institution - Any prison, jail, reformatory, work farm, detention center, halfway house, community-based rehabilitation center, or any other similar institution designed for the confinement or rehabilitation of criminal offenders.

Course competencies - In postsecondary education, the skills and knowledge of a discipline to be conveyed to a student as a part of a particular course.

Course curriculum - In secondary education, a detailed guide of daily activities and learning experiences that guide a learner through a course to completion.

Course inventory - A list of courses that comprise the approved technical programs and adult vocational courses for each postsecondary institution. This inventory is maintained by the Coordinating Board and is updated by the institutions on an annual basis for review and certification for funding purposes.

Course syllabus - In postsecondary education, a large detailed guide of daily activities and learning experiences that guide a learner through a course to completion.

Credit-in-escrow - A condition whereby the credit earned by a student enrolled for concurrent credit is retained by a second institution until the student enrolls there. Credit-in-escrow policies in Tech Prep programs should not require a student to pass more advanced levels of study before credit is granted.

Critical mass - A justifiable number of potential students available to participate in Tech Prep programs to ensure program success in terms of numbers of projected program graduates. Each consortium must describe and justify the potential student population with regard to the specific characteristics of the defined region (e.g., size of the region, number of participating ISDs, size of enrollment, urban, rural, or urban/rural participants).

Critical thinking skills - Skills such as problem solving with an emphasis on application, integration across disciplines, and project-based activities, that are integrated into Tech Prep curricula to increase student learning.

Curriculum integration - A focus on using content from several disciplines, SCANS competencies, and real-world applications, which build a connection between academic content and vocational practices.

Curriculum materials - Instructional and related or supportive material, including materials using advanced learning technology designed to strengthen the academic foundation and prepare individuals for employment at the entry-level or to upgrade occupational competencies of those previously or presently employed in any occupational field, and appropriate counseling and guidance material.

Developing a Curriculum (DACUM) - A process which identifies specific duties and associated tasks of a particular job or occupation.

Disadvantaged - Individuals (other than those individuals with learning disabilities) who have economic or academic disadvantages and who require special services and assistance in order to enable these individuals to succeed in vocational education programs. This term includes individuals who are members of economically disadvantaged families, migrants, individuals of limited English proficiency, and individuals who are dropouts from, or who are identified as potential dropouts from, secondary school. For the purpose of this definition, an individual who scores at or below the 25th percentile on a standardized achievement or aptitude test, whose secondary school grades are below 2.0 on a 4.0 scale, or who fails to attain minimum academic competencies may be considered academically disadvantaged.

Displaced homemaker - An individual who (1.) Is an adult; (2.) Has worked as an adult primarily without remuneration to care for the home and family and, for that reason, has diminished marketable skills; and (3.a.) Has been dependent on public assistance or on the income of a relative but is no longer supported by that income; (3.b.) Is a parent whose youngest dependent child will become ineligible to receive assistance under Part A of Title IV of the Social Security Act (42 U.S.C. 601), Aid to Families with Dependent Children, within two years of the parent's application for assistance under the Carl D. Perkins Vocational and Applied Technology Act; (3.c.) Is unemployed or underemployed and is experiencing difficulty in obtaining any employment or suitable employment, as appropriate; and (3.d.) Is described in paragraphs (1.) and (2.) of this definition and is a criminal offender.

Dual credit (concurrent credit) - An agreement between a school district or campus and a post secondary institution, in which a student receives both high school and college credit for successful completion of a particular course(s).

Dual enrollment (concurrent enrollment) - An agreement between a high school and postsecondary institution, in a specific program area, to award college credit for the successful completion of certain courses at the high school level.

Economically disadvantaged family or individual - A family or individual that is (1.) Eligible for any of the following:

(a.) the program for Aid to Families with Dependent Children;
(b.) benefits under the Food Stamp Act of 1977 (7 U.S.C. 2011);

(c.) to be counted for purposes of section 1005 of chapter 1 of title I of the Elementary and Secondary Education Act of 1965, as amended (Chapter 1)(20 U.S.C. 2701);

(d.) the free or reduced-price meals program under the National School Lunch Act (2 U.S.C. 1751).

(2.) Determined by the Secretary to be low-income according to the latest available data from the Department of Commerce; or (3.) Identified as low income according to other indices of economic status, including estimates of those indices, if a grantee demonstrates to the satisfaction of the Secretary that those indices are more representative of the number of economically disadvantaged students attending vocational education programs. The Secretary determines, on an ad hoc basis, whether other indices of economic status are more representative of the number of economically disadvantaged students attending vocational education programs, taking into consideration, for example, the statistical reliability of any data submitted by a grantee as well as the general acceptance of the indices by other agencies in the state or local area.

Education and Training Clearinghouse - A series of databases developed by the Coordinating Board that include education and training programs offered by selected institutions in Texas.

Electronic transcript - The electronic transfer of a student's academic record among colleges or between secondary schools and colleges as previously agreed to by a group of cooperating educational institutions.

Eligible recipient - Except as otherwise provided, a local educational agency, an area vocational education school, an intermediate educational agency, a postsecondary educational institution, a state corrections educational agency, or an eligible institution as defined in 34 CFR 403.117(a).

Emerging occupations - An occupation arising through forces related to technological changes in the workplace. The emerging occupation is expected to grow increasingly visible and distinguishable as a separate career area within the next 10 years. Workers from other occupations cannot perform the work without at least two months of technical/vocational education or training, as defined by the Texas Innovation Network System.

Essential elements - In secondary education, points of instruction, and learning that must be taught as a part of a particular course.

Evaluation process - A periodic review by the Coordinating Board for evaluation of technical education programs that focuses on the improvement of programs and student educational experiences and outcomes.

Exit points - Specific points in the sequence of courses in a technical education program at which a student may exit the program, receive a certificate, or be defined as a marketable skills achiever.

External learning experiences - Any curricular endeavor which takes place outside the walls of the classroom, including shadowing opportunities, field trips, simulated lab settings, and work-based learning opportunities.

Faculty - Persons employed in a teaching capacity, responsible for instruction in technical- and occupational-degree or certificate programs or adult occupational courses.

4MAT - An instructional model based on learning styles, which develops and integrates four modes of learning - project-based curriculum, cooperative learning, applied academics, and hands-on kinesthetic activities - the methodology advocated by Tech Prep.

4+2 - An articulated, competency-based technical/vocational program that links four years of high school with the first two years of postsecondary education to create a Tech Prep program, usually culminating in an associate's degree.

4+2+2 - An articulated, competency-based technical/vocational education program that links four years of high school with two years of postsecondary education, usually at a community or junior college, with the last two years of a baccalaureate degree at a university.

Full-time - Students who enroll in at least 12 credit hours per fall and/or spring semester.

Gender equity - To achieve the goal of gender equity, programs enrolling more than 75% of either gender qualify to be targeted for special focus in order to recruit the underrepresented gender. Measurement occurs after students are enrolled in a program and statistics are based on percentages from the previous year.

General education - Courses generally defined as academic in the areas of humanities, fine arts, social and behavioral sciences, and natural sciences and mathematics.

General occupational skills - Skills that indicate strong experience in, and understanding of, all aspects of an industry.

High Schools that Work - A program sponsored by the Southern Region Education Board which provides technical assistance, staff development, communications/publications, and assessment services aimed at helping high schools change the way they prepare career-bound students.

High technology - State-of-the-art computer, microelectronics, hydraulics, pneumatics, laser, nuclear, chemical, telecommunication, and other technologies being used to enhance productivity in manufacturing, communication, transportation, agriculture, mining energy, commercial, and similar economic activity, and to improve the provision of health care.

Higher Education General Information Survey (HEGIS code) - A code used for categories of program reporting and funding.

Individual with disabilities (IDEA) - This indicates (1.) Any individual who:

(a.) Has a physical or mental impairment that substantially limits one or more of the major life activities of that individual;

(b.) Has a record of an impairment described in paragraph (a.) of this definition.

(2.) Any individual who has been evaluated under Part B of the IDEA and determined to be an individual with a disability who is in need of special education and related services; or (3.) Any individual who is considered disabled under Section 504 of the Rehabilitation Act of 1974.

Individualized education program - A written statement for a disabled individual, developed in accordance with Sections 612(4) and 614(a)(5) of the IDEA (20 U.S.C. 1412(4) and 1414(a)(5)).

Individuals with Disabilities Education Act (IDEA) - (20 U.S.C. 1400 et seq.), formerly entitled "Education of the Handicapped Act." *****

Institution of higher education (IHE) - An educational institution in any state that:

(1.) Admits as regular students only persons having a certificate of graduation from a school providing secondary education, or the recognized equivalent of such a certificate;

(2.) Is legally authorized within such state to provide a program of education beyond secondary education;

(3.) Provides an educational program for which it awards a bachelor's degree or provides not less than a two-year program which is acceptable for full credit toward such a degree;

(4.) Is a public or other non-profit institution; and

(5.) Is accredited by a nationally recognized accrediting agency or association, or, if not so accredited:

(a.) Is an institution with respect to which the Secretary has determined that there is satisfactory assurance, considering the resources available to the institution, the period of time, if any, during which it has operated, the effort it is making to meet accreditation standards, and the purpose for which this determination is being made that the institution will meet the accreditation standards of such an agency or association within a reasonable time; or

(b.) Is an institution whose credits are accepted, on transfer, by not less than three institutions which are so accredited, for credit on the same basis as if transferred from an institution so accredited.

This term also includes:

(a.) Any school which provides not less than a one-year program of training to prepare students for gainful employment in a recognized occupation and that meets the provisions of paragraphs (1.), (2.), (4.), and (5.), of this definition; and

(b.) A public or nonprofit private educational institution in any state which, in lieu of the requirement in paragraph 1.) of this definition, admits as regular students persons who are beyond the age of compulsory school attendance in the state in which the institution is located and who meet the requirements of Section 484(d) of the Higher Education Act of 1965 (20 U.S.C. 1091(d)).

Integration of academic and technical/occupational curricula - A certain linkage between academic theory and technical/occupational courses that may entail the inclusion of applications of theory in the workplace setting as well as the use of real-life situations in academic courses.

Intermediate educational agency - A combination of school districts or counties (those divisions of a state utilized by the Secretary of Commerce in compiling and reporting data regarding counties) that are recognized in a state as an administrative agency for that state's vocational or technical education schools or for vocational programs within its public elementary or secondary schools. This term includes any other public institution or agency having administrative control and direction over a public elementary or secondary school.

Inverted degree plan - A program of study designed for the student pursuing an Associate in Applied Science Degree, that integrates additional upper-level technical or professional education and additional, supporting general education coursework and leads to an applied baccalaureate degree.

Job Training Partnership Act (JTPA) - (29 U.S.C. 1501 et seq.) *****

Learning styles - Different cognitive, affective, and psychomotor behaviors that cause students to perceive and respond differently to learning situations.

Library/learning resources - Instructional materials (e.g. books, audio-visual equipment, and computers) that support the educational/occupational development of the student.

Lifelong learning - The focus on broad-based transferable skills, such as SCANS competencies, that will prepare a student with the ability to learn, unlearn, and relearn, in order to adapt to occupation changes during the student's lifetime.

Limited English proficiency (LEP) - Persons who (1.) were not born in the United States or whose native language is one other than English, or (2.) who come from environments where a language other than English is dominant and thus have difficulties speaking and understanding instruction in the English language.

Local apprentice training committee - A committee whose members are appointed by employers of apprentices, bargaining agents representing members of an apprenticeable trade, a trade association representing an apprenticeable trade, or a combination of these whose responsibility it is to direct and administer the apprenticeship program consistent with the rules and regulations for the Coordinating Board and the postsecondary institution

Local education agency - A board of education or other legally constituted local school authority having administrative control and direction of public elementary or secondary schools in a city, county, township, school district or political subdivision in a state, or any other public educational institution or agency having administrative control and direction of a vocational education program.

Marketable skill - A demonstrated level of competency that leads to entry-level employment and/or upgrade of position.

Marketable skills achiever - A student who may be identified in either of the following ways: (1.) Students who have declared an intent to acquire or upgrade their skills for employment and have completed at least one technical education credit course; or (2.) Students who have completed at least nine semester credit hours, or the equivalent, in the same CIP code and did not re-enroll at the same institution the following semester.

Master Plan for Vocational and Technical Education - A blueprint for the reform of technical/vocational education in Texas, including the development and implementation of Tech Prep Associate of Applied Science Degree programs, prepared by the Coordinating Board and the State Board of Education. This reform will be accomplished most effectively through the partnerships of employers, educators, and training providers established in the 24 Quality Work Force Planning committees.

Mastery learning - An instructional model usually consisting of five components: scope and sequence of objectives, curriculum alignment, "no fault" and summative testing, provision for corrective instruction to students scoring below 80% mastery on the "no fault" test, and documentation of student progress. Mastery learning can support Tech Prep as a curriculum and instructional model for competency-based programs.

Mentoring - The process by which a worker gives direct on-the-job instruction to an assigned student in a work environment.

Multiple site offerings - Programs and courses specifically approved by the Coordinating Board to be offered at multiple sites.

Occupational education - An organized technical and vocational program of study that is directly related to the preparation of individuals for paid or unpaid employment, or additional preparation for a career that does not require a baccalaureate or advanced degree.

Occupational employment statistics (OES) codes - Five-digit identifiers for approximately 700 occupational clusters that comprise a coding system designed by the Bureau of Labor Statistics and are used in generating occupational projections and industry staffing patterns by the Texas Employment Commission.

Open-entry/open-exit format - A delivery mechanism that allows students to enter and exit at various points in the academic year and curriculum, regardless of the beginning and ending dates of the terms.

Options - Concentrations within programs that reflect the training required for specific occupations within a broad career field and result in the same award. Options must share a common core of courses (e.g., AAS Degree in Office Administration with options in Executive, Medical, Legal, and Bilingual Secretarial).

Postsecondary institution (PSI) - A public community or technical college, university, or proprietary institution offering certificate, associate, and bachelor degree-granting programs.

Postsecondary technical and occupational programs - Organized units of instruction that are directly related to the acquisition and/or updating of occupational skills and for which a certificate or an AAS Degree is awarded.

Preemployment Laboratory Course (PELE) - A technical course designed to provide occupation-specific training in an occupation, provided in a laboratory setting utilizing tools, equipment, and processes used in the occupation.

Preparatory Instruction for Apprenticeship - A course of instruction lasting six months or less that teaches the basic skills required for an individual to comply with the terms of his or her apprenticeship agreement as required by Section 33.02(d) of the Texas Education Code.

Preparatory services - Services, programs, or activities designed to assist individuals who are not enrolled in vocational education programs in the selection of, or preparation for participation in an appropriate vocational education training program. Preparatory services include, but are not limited to (1.) services, programs or activities related to outreach to, or recruitment of, potential vocational education students; (2.) career counseling and personal counseling; (3.) vocational assessment and testing; and (4.) other appropriate services, programs, or activities.

Preparatory training - Technical and vocational adult courses designed for persons who require preparation to enter the labor market or a new career field.

Private vocational training institution - A business trade school, technical institution, or other technical or vocational school, in any state that (1.) Admits as regular students only persons who have completed or left elementary or secondary school and who have the ability to benefit from the training offered by the institution; (2.) Is legally authorized to provide and provides within that state a program of postsecondary vocational or technical education designed to prepare individuals for useful employment in recognized occupations; (3.) Has been in existence for two years or have been specially accredited by the Secretary as an institution meeting the other requirements of the definition; and (4.) Is accredited:

(a.) By a nationally recognized accrediting agency or association listed by the Secretary;

(b.) If the Secretary determines that there is no nationally recognized accrediting agency or association qualified to accredit schools of a particular category, by a state agency listed by the Secretary; or (c.) If the Secretary determines that there is no nationally recognized or state agency or association qualified to accredit schools of a particular category, by an advisory committee appointed by the Secretary and composed of persons specially qualified to evaluate training provided by schools of that category. The committee shall prescribe the standards of content, scope, and quality that must be met by those schools and shall also determine whether particular schools meet those standards.

Professional plan - A high school plan intended for students who will finish a minimum of four years of college.

Program - An organized unit of instruction clearly related to the acquisition and/or upgrading of technical skills and for which a Coordinating Board-approved certificate or an Applied Associate Degree is awarded.

Program advisory committees - Specific groupings of individuals selected from business and industry that provide advice and assistance to one or more technical education programs.

Program approval - The process whereby an institution requests and is granted authorization to implement a new technical education program.

Program closure - The process whereby a program is officially discontinued and removed from the program inventory voluntarily, either by the institution or by the Coordinating Board through the sunset review process.

Program deactivation - The process whereby an institution suspends all new student enrollments in order to assess program vitality and make revisions without loss of eligibility for state funding or dropping the program and its courses from the program/course inventory. Deactivated programs are subject to Coordinating Board evaluation, but are not subject to sunset review.

Program effectiveness panel - A panel of experts in the evaluation of education programs and in other areas of education, at least two-thirds of whom are not federal employees, who are appointed by the Secretary, and who review and assign scores to programs according to the criteria in 34 CFR 786.12 or 787.12.

Program revision - The process whereby an institution requests a change to an existing approved program.

Program year - A twelve-month period during which a state operates its vocational education program, which is most generally a period beginning on July 1 and ending on the following June 30.

Proprietary school - A for-profit or not-for-profit business enterprise operated within Texas that offers a course or courses of instruction in the classroom or through correspondence for the purpose of training or preparing individuals either for work in a business, trade, technical or industrial occupation or for vocational or personal improvement, except as excluded by Section 32.12 of the Texas Education Code.

Qualifications of Technical Education Personnel - A set of guidelines, procedures, and personnel criteria of the Coordinating Board that identify the qualifying requirements for instructors, administrators, and counselors assigned to technical education degree programs, certificate programs, and adult vocational courses.

Quality Work Force Planning committees - The 25 regional planning groups, comprised of representatives from local education and training providers, business, industry, and labor, charged with the responsibility of analyzing labor market information, identifying targeted occupations, and developing a service area plan for vocational and technical education in their particular regions.

Regional Labor Market Information System (LMIS) - Established on a regional basis, these systems are intended for use in program planning and should include an inventory of key regional industries with the greatest employment potential, as well as an inventory of targeted occupations within key regional industries.

Related instruction for apprenticeship programs - Organized, off-the-job instruction in theoretical or technical subjects required for the completion of an apprenticeship program for a particular apprenticeable trade.

Remediation - An activity designed to teach basic competencies in such areas as reading, writing, oral communication, and arithmetic.

School facilities - Classroom and related facilities, including initial equipment, and interests in lands on which the facilities are constructed. The term does not include any facility intended primarily for events for which admission is to be charged to the general public.

School-to-Work transition - A method of instruction that provides guided training to the student in the work environment and that enhances critical thinking skills and the ability to transfer applied and theoretical knowledge to the workplace.

Secondary technical and vocational programs - Organized units of instruction designed to provide students the opportunity to make informed occupational choices, determine educational needs and options, develop employability traits, and acquire marketable occupational skills for career preparatory programs and/or articulation.

Secretary's Commission on Achieving Necessary Skills (SCANS) - A commission of the U.S. Department of Labor which identified skills required in the workplace, and reported its findings in several documents.

Service delivery plan - A plan developed by each Quality Work Force Planning committee for its region to address its responsibilities. The plan shall contain a mission statement, goals, objectives related to each goal, and specific activities designed to meet each objective. A copy of each two-year plan shall be provided to the tri-agency partnership prior to July 1 of even-numbered years beginning in 1992.

Shadowing - A process in which a student follows a worker on the job in a targeted field, in order to become familiar with job requirements and duties.

Single parent - An individual who is unmarried or legally separated from a spouse; has a minor child or children for which the parent has either custody or joint custody; or is pregnant and unmarried or legally separated from a spouse.

Small business - A for-profit enterprise employing 500 or fewer employees.

Special populations - Individuals with disabilities, educationally and economically disadvantaged individuals (including foster children), individuals of limited English proficiency, individuals who participate in programs designed to eliminate sex bias, and individuals in correctional institutions.

Specific job training - Training and education for skills required by an employer to provide the individual student with the ability to obtain employment and to adapt to the changing demands of the workplace.

Spread - The degree to which (1.) Project activities and results are demonstrated to others; (2.) Technical assistance is provided to others to help them replicate project activities and results; (3.) Project activities and results are replicated at other sites; or (4.) Information and material about, or resulting from, the project are disseminated.

Standard - The level or rate of an outcome.

State - Any of the 50 states, the Commonwealth of Puerto Rico, the District of Columbia, Guam, American Samoa, the Virgin Islands, the Commonwealth of the Northern Mariana Islands, and Palau (until the Compact of Free Association with Palau takes effect).

State board - A board designated or created by state law as the sole state agency responsible for the administration of vocational education or for supervision of the administration of vocational education in the state.

State Corrections Educational Agency - The state agency or agencies responsible for carrying out correctional education programs in the state.

State council - The State Council on Vocational Education established in accordance with 34 CFR 403.17-403.19.

State Occupational Information Coordinating Committee (SOICC) - Supported by five state agencies, including the tri-agency partnership, this committee is charged with the development of the Statewide Career Occupational Information Database and Career Guidance System, which is intended to help students and adults identify which jobs and career options are promising, what the educational requirements are, and where training is offered.

State of Texas Academic Resources Link (STARLINK) - A teleconference training network established to facilitate instructional needs and the professional development of technical education faculty of community and technical colleges in Texas.

Successful student outcomes - A term used to describe institutional effectiveness as defined by Coordinating Board requirements for follow-up data.

Sunset review - A formal evaluation process through which programs are reviewed by the Coordinating Board for possible closure.

Supplementary instruction for apprenticeship - A course of instruction for persons employed as journeymen craftsmen in apprenticeable trades designed to provide new or upgrade current skills.

Supplementary services - Services which include curriculum modification, equipment modification, classroom modification, supportive personnel, and instructional aids and devices.

Target populations (Carl D. Perkins Act of 1990) - Members of the population who reside in an institution's service area and are identified by age, gender, ethnicity, and special population categories.

Targeted occupations - Occupations established on a regional basis, specifically targeted occupations based on projected average annual job openings, positive growth-to-replacement ratios, specific vocational preparation training times, and other appropriate labor market variables.

Task analysis - A process to determine the specific skills, knowledge, and attitudes a worker needs to perform each on-the-job task.

Teacher Expectations Student Achievement (TESA) - A series of workshops designed to show teachers how student achievement is impacted both negatively and positively by teacher expectations and how expectations can influence a teacher's approach to instruction.

Technical education - A term used by the Coordinating Board's Community and Technical Colleges Division to describe programs and courses that provide skills and competencies required for success in the workplace.

Technical Education Program Guidelines - A procedures and guidelines manual of the Coordinating Board for use in state-funded technical education programs in public community and technical colleges and associate-degree granting proprietary institutions.

Technical education student - A student enrolled in an approved technical or adult vocational course or who has declared intent to major in a technical program.

Technical/Entry-level plan - A high school plan which provides for education towards entry-level jobs or provides the foundation for students planning to attend a junior college or technical school.

Technology education - An applied discipline designed to promote technological literacy that provides knowledge and understanding of the impacts of technology including its organizations, techniques, tools, and skills to solve practical problems and extend human capabilities in areas such as construction, manufacturing, communication, transportation, power, and energy.

Tech Prep - A term used to describe a dual credit agreement in which all of a student's courses are aligned from the 9th grade through the 14th or 16th, culminating in an AAS Degree or bachelor's degree.

Tech Prep Associate in Applied Science Degree program - A cooperatively developed, competency-based six-year program of study beginning in high school, resulting in an Associate of Applied Science Degree with advanced skills from a community or technical college or an associate-degree granting proprietary institution.

Texas Academic Skills Program (TASP) - An examination that measures each student's reading, writing, and mathematical skills to determine whether the student is prepared to successfully complete college-level course work.

Texas Assessment of Academic Skills Test (TAAS) - An examination measuring each student's reading, writing, and mathematical skills to determine whether the student has mastered a specified course of high school study.

Texas Education Agency (TEA) - *****

Texas Innovation Information Network Systems (TIINS) - A non-profit organization funded by the Texas Legislature to serve as an advanced technology information and research clearinghouse for business, institutions of higher education, and state government. TIINS is also funded by the Texas Department of Commerce to develop a forecast of occupations expected to emerge as Texas businesses and industries adopt new technologies.

Texas Scholars - A program sponsored by the Texas Business Education Coalition, which encourages students to engage in a rigorous academic course of study and whose goals are comparable to those of Tech Prep.

Texas Skills Development Program - A program by which a system of employability standards demanded by business and industry are being developed, that identify the level of proficiency required of high school and college students, as well as of students leaving school to enter the workforce.

Time-shortened articulation program - An articulation program in which high school students receive college credit that allows them to graduate from a higher education program in less time than a student beginning the program of study at the higher education level and includes advanced placement based on articulated course work.

Total Quality Management (TQM) - A business model used in educational settings, which demonstrates principles that can be used as a powerful motivating tool by promoting active involvement by students in the classroom.

Transportability - The ease by which project activities and results may be replicated at other sites, such as through the development and use of guides or manuals that provide step-by-step directions for others to follow in order to initiate similar efforts and produce comparable results.

Tri-agency partnership - Three agencies - the Education Coordinating Board, the Texas Education Agency, and the Texas Department of Commerce - are responsible for the statewide implementation of Quality Work Force Planning and Tech Prep.

Tribally-controlled community college - An institution that receives assistance under the Tribally Controlled Community College Assistance Act of 1978 (25 U.S.C. 1801 et seq.) or the Navajo Community College Act (25 U.S.C. 640a).

2+2 - An articulated, competency-based technical education program that links the last two years of secondary education with the first two years of postsecondary education to create a strong four-year curriculum.

2+2+2 - An articulated, competency-based technical education program that links a 2+2 program to the last two year of postsecondary education, resulting in a baccalaureate degree.

Vocational education - Organized educational programs offering a sequence of courses or instruction, in a sequence or aggregation of occupational competencies, that are directly related to the preparation of individuals for paid or unpaid employment, in current or emerging occupations, requiring other than a baccalaureate or advanced degree. These programs must include competency-based applied learning that contributes to an individual's academic knowledge, higher-order reasoning, and problem-solving skills, work attitudes, general employability skills, and the occupation-specific skills necessary for economic independence as a productive and contributing member of society. This term also includes applied technology education.

Vocational student organization - Organizations for individuals enrolled in vocational education programs that engage in activities as an integral part of the instructional program. These organizations may have state and national units that aggregate the work and purposes of instruction in vocational education at the local level.

Wage record follow-up system - An automated process to analyze the employment status of former technical education students through the use of the Texas Employment Commission's Unemployment Insurance Wage Record Database.

Wagner-Peyser Act - This is the act in 29 U.S.C. 49 et seq.

Workplace Competencies and Foundation Skills - *****

Work study - Any program which combines work with education, such as cooperative education, clinical education, internships, and apprenticeships. As it applies to Tech Prep, it is work-based learning that can involve paid and non-paid experiences of work in the same field that the student is studying, leading to additional competencies beyond those taught in the classroom.